



**Department of Toxic Substances Control
Pollution Prevention
Report and 2-Year Workplan**

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Prepared by the Department of Toxic Substances Control
Office of Pollution Prevention
Edwin F. Lowry, Director

The Department of Toxic Substances Control's Office of Pollution Prevention and Technology Development wishes to acknowledge the time and energy, and expert advice provided by its Pollution Prevention Advisory Committee.

DTSC Pollution Prevention Advisory Committee

Kelly Moran, Sierra Club (Chairperson)
Stewart Crook, Agilent Technologies (Vice-Chair)
Greg Beach, Cal/CUPA Forum
Brian Cox, Humboldt County Environmental Health
Barbara Brenner, Breast Cancer Action
Ann Heil, Los Angeles County Sanitation Districts
Larry Moore, Larry's Autoworks
Maggie Robbins, California Federation of Labor
Jim Schrack, ARCO
Martha Valdes and Joy Williams, Environmental Health Coalition

Cal/EPA *ex officio* representatives:
Don Ames, Air Resources Board
Jim Bennett, Water Resources Control Board
Bob Borzelleri, Department of Toxic Substances Control
Jim Donald, Office of Environmental Health Hazard Assessment
Bob Hoffman, Cal/EPA Secretary Winston H. Hickox
Bill Orr, Integrated Waste Management Board

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This document was prepared by Kathy Barwick, Senior Hazardous Substances Scientist, Department of Toxic Substances Control. For copies, contact the DTSC's Office of Pollution Prevention and Technology Development at (916) 322-3670

Table of Contents

	Page
Executive Summary	9
I. Introduction.....	17
II. Trends in California's Hazardous Waste Generation, 1993 to 1998	
A. Introduction.....	21
B. Hazardous Waste Generation Trends, 1993-1998.....	24
C. Hazardous Waste Source Reduction Progress in California	33
III. Current Status of Hazardous Waste Generation	
A. What wastes were generated?.....	37
B. Which industries generated the waste?.....	39
C. How were the wastes managed?.....	41
D. Which facilities generated the most waste?.....	45
D. Specific chemicals of concern.....	46
E. Discussion and Conclusions.....	49
IV. DTSC Two-Year Pollution Prevention Workplan.....	51
A. Mission.....	51
B. Objectives.....	52
C. Development of Targeting Considerations.....	53
D. Workplan for Vehicle Service Repair Industry.....	56
E. Petroleum Refining Industry Project Workplan.....	65
F. Other DTSC Pollution Prevention Program Activities.....	71
V. Economic and Financial Incentives for Pollution Prevention..	83
VI. DTSC Research Projects, 1995--Present.....	95
VII. Pollution Prevention Advisory Committee Recommendations and Issues for Further Discussion.....	103
VIII. Appendices	107

List of Figures

	Page
Figure 1: Manifested Hazardous Waste, 1993-1998.....	24
Figure 2: Average Tons per 100 Largest-Volume Generators.....	27
Figure 3: Average per Smaller Generators (tons).....	28
Figure 4: California Out of State Waste Shipments.....	29
Figure 5: Total TRI Releases to All Environmental Media, 1987-1998 (does not include offsite recycle).....	32
Figure 6: Offsite Disposal, Offsite Recycling, TRI Data.....	33
Figure 7: Total and recurrent wastes vs. 5% reduction goal.....	34
Figure 8: Gross State Product, Selected Years (Millions of 1992 \$)..	35
Figure 9: Timeline for Automotive Repair/Fleet Maintenance Project.....	64
Figure 10: Timeline for Petroleum Refining Activities Source Reduction Activities	69
Figure 11: Trends in California's Haz Waste Disposal Fee, 1989 to 2000.....	88

List of Tables

Table 1: Hazardous Waste Manifested to Transfer Stations.....	25
Table 2: Changes in the Number of Generators, 1993 to 1998...	26
Table 3: Number of TRI Filers in California.....	31
Table 4: Examples of Wastes Transported Under California Waste Codes.....	37
Table 5: Percent of Recurrent Waste, by Waste Group, in California in 1998 (manifest data).....	38
Table 6: Percent of Each SIC Code to Manifest Total, 1998 Manifest.....	40
Table 7: California's TRI Largest Emitters by SIC Code; Sorted by Offsite Disposal (Off-dtu).....	41
Table 8: SIC Codes for California Generators >10,000 tons, 1997 BGR.....	41
Table 9: Hazardous Waste Management Methods in California, 1998 Manifest.....	42
Table 10: Top 5 Industry Types Disposing to Landfill, 1998 Manifest.....	43
Table 11: Top 6 Waste Codes to Landfill, 1998 Manifest.....	43
Table 12: Top 11 Facilities to Landfill, 1998 Manifest.....	44
Table 13: 1998 Manifest data: Top 11 Industry Types to Incineration.....	44
Table 14: Top 14 CWCs to Incineration—1998 Manifest.....	45
Table 15: Top 12 Facilities to Incineration; 1998 Manifest.....	45

Table 16: 1998 Manifest Data, 19 Largest Quantity Generators.....	46
Table 17: Pollution Prevention Program Summary.....	52
Table 18: Possible Industry Targets for SB 14 Plan Review.....	72
Table 19: SB 14 Implementation Workplan Summary.....	73
Table 20: Local Government Support Workplan Summary.....	74
Table 21: Regulatory Integration Workplan Summary.....	75
Table 22: Technical Studies & Information Transfer Workplan Summary.....	77
Table 23: SB 1916 Advisory Committee Staff Support Workplan.....	79
Table 24: Other DTSC P2 Activities Workplan.....	80
Table 25: Application of Targeting Considerations to Petroleum Refineries.....	148
Table 26: Application of Targeting Considerations to Vehicle Service And Repair Industry.....	149
Table 27: 1998 TRI Cyanide Releases by Industry Type.....	151
Table 28: 1998 TRI Facility Cyanide Releases.....	151
Table 29: 1998 TRI: Lead, by Industry Type.....	152
Table 30: 1998 TRI, Lead by Facility.....	152
Table 31: 1998 TRI, Lead Compounds Releases by Industry.....	154
Table 32: 1998 TRI Lead Compounds Releases by Facility.....	155
Table 33: Table 6-10: 1998 TRI: 1,1,1-TCA by Industry Type.....	156

Table 34: 1998 TRI: 1,1,1-TCA by Facility.....	157
Table 35: 1998 TRI: Tetrachloroethylene by Industry Type.....	158
Table 36: 1998 TRI, Tetrachloroethylene by Facility.....	159
Table 37: 1998 TRI Methylene Chloride Releases by Industry Type.....	161
Table 38: 1998 TRI Releases, Methylene Chloride Releases by Facility.....	162
Table 39: Copper, Total TRI 1998; top 20 SICs.....	163
Table 40: Copper, TRI 1998 by Facility.....	164
Table 41: Copper Compounds, 1998 TRI	165
Table 42: Total Copper Compounds, 1998 TRI Top 13 Facilities.....	167

Appendices

Appendix 1: Advisory Committee Agendas and Minutes	107
Appendix 2: California Waste Codes	139
Appendix 3: Manifest Limitations	141
Appendix 4: TRI Reporting Categories	144
Appendix 5: Wastes Excluded from Hazardous Waste Designation Between 1993 and 1998.....	147
Appendix 6: Application of the Targeting Considerations to DTSC's Selected Industry Targets.....	148
Appendix 7: Chapter 3 Tables	151
Appendix 8: Summary of and Responses to Comments on the Department of Toxic Substances Control's Pollution Prevention Workplan and Report	168

Department of Toxic Substances Control's Pollution Prevention Report and Two-Year Workplan Executive Summary

Californians are concerned about the quality of their environment, and are vitally interested in ensuring that the generation and release of toxic and other hazardous substances is minimized. In response to this concern, the Legislature has augmented the state's hazardous waste source reduction program, located within the California Environmental Protection Agency's (Cal/EPA) Department of Toxic Substances Control (DTSC).¹

The legislature also directed DTSC to convene a Pollution Prevention Advisory Committee (Advisory Committee) to help determine how to target DTSC's pollution prevention resources. The Advisory Committee consists of ten public members representing diverse interests, and five *ex officio* members from relevant Cal/EPA boards and departments. Through a collaborative fact-finding and decision-making process, DTSC and the Advisory Committee evaluated source reduction progress in the state and developed this two-year work plan.

Source reduction (also known as "pollution prevention," or p2) is defined in California statute as:

- * any action that causes a net reduction in the generation of hazardous waste; or
- * any action taken before the hazardous waste is generated that results in a lessening of the properties which cause it to be classified as a hazardous waste.

This report contains the two-year workplan required by SB 1916, as well as information about hazardous waste generation and environmental release data, criteria used for selecting target industries, proposed pollution prevention activities, economic and financial incentives for pollution prevention, and the status of DTSC-sponsored research into pollution prevention alternatives.

Hazardous waste generation trends and source reduction progress

Chapters 2 and 3 of this report provide an overview of hazardous waste data, and a comparison of trends to the statewide source reduction goal established in statute [Health & Safety Code ' 25244.15(e)]. The statute established a goal of five per cent reduction per year, from 1993 to 2000.

Chapter 2 looks at trends:

- While the total recurrent² hazardous waste generated in 1998 was 12% less than in 1993, the current trend is increasing: waste generation rose 11% from 1997 to 1998.

¹ See Health & Safety Code section 25244.12 et. seq.; SB 1916 of 1998

² "Recurrent" hazardous waste is a term used to describe wastes that are produced as a part of ongoing operations and processes, as opposed to "one-time-only" wastes such as site clean-up wastes. "Recurrent" waste is defined more specifically in Chapter 2.

- Non-recurrent wastes consistently comprise a significant portion (ranging from 26% to 35%) of California's total manifested waste.
- The number of hazardous waste generators reporting to DTSC has increased 48% since 1993.
- The state's largest generators have not significantly altered their relative contribution to the state's hazardous waste stream. Between 1993 and 1998, the average per generator, for the larger-quantity generators, was reduced by about 8% between 1993 and 1998—less than 2% per year.
- California's larger generators did not meet California's goal of reducing hazardous waste generation by 5% per year from 1993-2000³.
- Waste oil and mixed oil consistently comprise a significant portion of California's total recurrent hazardous waste generation—from 31% to 36% (1996). This is California's single largest waste stream, and appears to be predominantly engine motor oil destined for recycling.
- California as a whole did not meet the 5% per year reduction goal established in statute.

Chapter 3 provides a snapshot of 1998 (for manifest and TRI data) and 1997 (Biennial Generator Report data), to get an idea of what waste streams were generated, what industries generate the waste, how wastes were managed, and which facilities generated the most waste.

- Waste oil (CWC 221, waste oil & mixed oil) dominates recurrent wastes, contributing 33% of the total amount of recurrent waste in California. The next largest waste stream is CWC 181 (Other Inorganic Solid Waste), 14% of the total.
- "Refuse systems" generated almost half of the total TRI releases, followed by the petroleum refining industry at 30%.
- The petroleum refining industry reported 65% of the total wastes reported under the Biennial Report System.
- In 1998, recycling was the most prevalent method for managing hazardous waste in California, accounting for 48% of the manifested waste total.
- 24% per cent of the manifested wastes were "disposed".
- The aircraft and petroleum refining industries sent the largest quantities of wastes to incineration.

The chapter also includes data for chemicals identified by the Advisory Committee as being of particular concern. These included cyanide, mercury, and dioxin. Categories of chemicals of concern included pesticides, especially diazinon; solvents, especially tetrachloroethylene, methylene chloride and 1,1,1-trichloroethane; and metals, such as copper, lead, zinc, selenium and chromium (mostly due to their presence in surface waters).

The two-year workplan

Chapter 4 contains DTSC's Office of Pollution Prevention and Technology Development's (DTSC) pollution prevention workplan for fiscal years⁴ 00/01 and 01/02, with particular emphasis on the large and small industry targets selected by DTSC with the help of the Advisory Committee.

³ H&S Code section 25244.15(e)

⁴ California state government's fiscal years begin July 1st and end the following June 30th.

Selecting targets for DTSC's pollution prevention program

Fourteen “considerations,” set forth below, were developed by DTSC staff and the Advisory Committee as a way to describe the set of conditions considered in selecting targets for the two-year workplan. Because of DTSC’s clear hazardous waste authority and expertise, only industry types that generate hazardous waste were considered as targets.

The application of the “considerations” to an industry type was much less stringent. The considerations represent the kinds of things DTSC and the Advisory Committee thought important when choosing targets. However, an industry type did not have to meet all of the considerations to be chosen as the pollution prevention target. There was no scoring or weighting of these considerations; instead, a qualitative look at the industry compared to the considerations was made.

Screening Criterion

1. Connection to hazardous waste

Considerations

2. Waste quantities
3. Coincidence with regulatory, other agency efforts; opportunity for cross-media work within Cal/EPA
4. Environmental problem
5. Potential for harm from substances released/generated from an industry type
6. Technical feasibility
7. Existence of known p2 solutions
8. Economic feasibility
9. Industry interest, willingness to participate
10. Labor interest, willingness to participate
11. Environmental Justice
12. DTSC technical expertise (building on what we know)
13. Opportunity to educate general public about pollution prevention
14. Advances the Precautionary Principle

Automotive repair/fleet maintenance industry project

The vehicle service and repair/fleet maintenance industry has been selected by DTSC to receive special p2 program focus. There is a need to improve compliance and implement p2 practices in this industry. Although there are some local pollution prevention assistance providers working with this industry group, there is a lack of statewide coordination to promote the environmental and economic benefits of pollution prevention in this industry.

The goal of DTSC’s project is to reduce the environmental and human health impacts of automotive repair and maintenance operations within California. This will be accomplished by providing training and information to the industry and promoting the implementation of pollution prevention methods and “BMPs” (best management practices). A significant challenge will be reaching and effecting changes in an industry that includes more than 30,000 businesses in California. DTSC plans to work with industry, labor groups, community and environmental groups, vendors, and state and local government agencies to

develop and implement the project throughout the state. Project steps include conducting a needs assessment, defining project goals, developing partnerships and resources, providing training, educating consumers and motorists, conducting an awards program, and measuring program success.

Petroleum refineries project

As California's largest hazardous waste generator by industry type, the petroleum refining industry will also be a focus for DTSC's pollution prevention program. A review of seventeen of California's largest petroleum refineries revealed 126,500 tons of nonaqueous hazardous waste generated in 1998. While DTSC source reduction plan reviews found that the industry reduced its non-aqueous waste generation by more than 30 percent from 1990-1994, and again by more than 30 percent from 1995-1997, petroleum refinery workers and local communities continue to express concern over refinery impacts on their health and environment.

DTSC proposes a project that will focus on improving refinery practices, working conditions and the surrounding environment. Central to this objective is increasing source reduction by petroleum refining industry facilities. This goal will be pursued through an open process and voluntary participation of the petroleum refineries and all stakeholder groups.

DTSC anticipates obtaining the commitment to implement model source reduction practices from between three to five individual refineries statewide. DTSC will identify and involve key stakeholders including, refineries, refinery communities, workers and government. The refineries' source reduction commitments will be in addition to any previous projections made as part of industry hazardous waste planning efforts under SB 14. DTSC will identify general information on targeted industry wastestreams and model source reduction measures, and will also publicize information profiles on all of the state's larger refineries. This information, coupled with a project report and the continuing status tracking of ongoing local projects implementing pollution prevention commitments, will be updated on the DTSC's web site available to all interested stakeholders during and after the project concludes.

This will be the first time that DTSC's p2 program adopts a strategy based on establishing active and ongoing dialogue among refineries and key stakeholder groups that is intended to continue after the local pollution prevention projects are implemented. It is expected that this dialogue will result in future pollution prevention successes that will be based on considerations of stakeholder input.

Economic Incentives for Pollution Prevention

Chapter 5 contains information about economic and financial incentives for source reduction. The costs associated with the generation and management of hazardous waste. In the infancy of pollution prevention, waste management cost avoidance was assumed to be sufficient motivation alone to inspire widespread pollution prevention implementation. During the last decade, however, pollution prevention professionals have observed that pollution prevention did not assume what many felt was its rightful place as the primary waste/pollution management option for industry.

Two categories of financial incentives—positive incentives and negative incentives—are evaluated in this report. Positive incentives include loans, loan guarantees, tax credits, and grants. Negative incentives include taxes and fees, such as from generator fees, disposal fees, and feedstock taxes.

The report concludes that for positive incentives to be effective, businesses must increase their ability to account for all of the costs associated with generating and managing wastes—including the long-term liability costs. It also concludes that the current fee structure does not provide incentives for California generators to invest in strategies that reduce waste generation. While there may be opportunities to incorporate pollution prevention incentives into any new fee structure that is developed, such incorporation should be coupled with the need to encourage generators to adequately account for the full costs of waste generation.

Fines and penalties that result from enforcement actions could be used more consistently by the DTSC to increase businesses' awareness of p2 as an effective compliance strategy, and more significantly to use the enforcement process to gain the measurable environmental benefits of reduce waste generation.

Increased implementation of pollution prevention strategies will depend on a variety of motivators working in concert to direct businesses toward improved environmental performance. A more thorough understanding of the costs associated with generating waste is needed to move businesses (particularly the smaller ones) toward pollution prevention. In addition, the important role that regulatory standards play should not be overlooked. Clearer connections between programs enforcing such standards and programs providing assistance (both financial and technical) would likely increase pollution prevention implementation in California.

Finally, while there may be a need to expand California's current program for financing pollution prevention equipment purchases for smaller hazardous waste generators in California, it is not clear whether such programs are needed. The availability of such financing would likely be more successful if linked with technical assistance/consulting programs that would help businesses identify the appropriate pollution prevention strategies for their facilities.

DTSC Pollution Prevention Research Projects

As part of its overall mission to identify and promote non- and less-toxic alternatives, DTSC is continually identifying research needs and funding sources for such research. Chapter 7 describes thirteen major source reduction projects undertaken by DTSC since 1995. While the availability of these funds is inconsistent, DTSC has nevertheless succeeded, over time, in funding a number of research projects from a variety of funding sources. DTSC works closely with funding agencies, as well as the local programs that will benefit from the research, in order to ensure that research findings are disseminated. The thirteen projects were:

- ◆ Alternatives to Mineral Spirits in Auto Repair Facilities,
- ◆ Lawrence Livermore/OPPTD Certification Criteria for Solvent Alternatives,
- ◆ Community Source Reduction Plan Review,

- ◆ Hazardous Waste Inspector Pollution Prevention Training,
- ◆ Guidance for Water-Based Solvents in Auto Repair and Maintenance Cleaning Facilities, Substitutes for Brake Cleaning: Minimizing Human Health and Environmental Consequences
- ◆ Aqueous Cleaning Case Studies Project,
- ◆ Assisting Furniture Strippers in Reducing Health Risks from Methylene Chloride Stripping Formulations, An Alternative to Methylene Chloride,
- ◆ Cleaner Technologies Substitutes Assessment: Adhesives Use in the Furniture Industry,
- ◆ Building Maintenance Products Pollution Prevention Project,
- ◆ Mercury Reduction for Hospitals and Medical Facilities, and
- ◆ Batch-Loaded Cold Cleaning Conversion in Southern California: A Small Business Technical Assistance Program.

The chapter contains more information about these projects, including costs, results (when available; some projects are still underway), and information about DTSC's partners. The chapter also identifies and discusses the concern that DTSC may be over-reliant on federal grants for p2 research and local government program support.

Advisory Committee Recommendations

Chapter 7, the report's final chapter, contains a list of recommendations from the Advisory Committee, as well as an initial list of possible topics the committee may undertake in the next year of its deliberations.

The recommendations listed below are divided into two sections. The first section contains recommendations from the public members of the Advisory Committee. Cal/EPA *ex officio* representatives did not state any official agency or administration position on these recommendations. They did, however, provide valuable input on all the topics discussed, to help the public members more carefully craft the recommendations. The second section contains four topics on which the Advisory Committee is currently deliberating. The final draft of this document will contain the results of those deliberations.

Advisory Committee Recommendations

1. The Advisory Committee recommends that DTSC focus on the vehicle service and repair industry for its small business program for fiscal years 00/01 and 01/02, and concurs with the approach defined in this report.
2. The Advisory Committee recommends that DTSC focus on the petroleum refining industry for its large business program for fiscal years 00/01 and 01/02, and concurs with the approach defined in this report.
3. The Advisory Committee recommends that DTSC involve employees and/or their unions, public health advocates, and public health agencies, as well as environmental advocacy and industry groups, in developing and implementing its pollution prevention program.

4. The Advisory Committee recommends that DTSC improve its hazardous waste data to allow for more accurate targeting and pollution prevention progress assessment.
5. The Advisory Committee recommends that the Department of Pesticide Regulation participate in the SB 1916 process by providing a representative to the Pollution Prevention Advisory Committee.
6. The Advisory Committee supports providing funding to local government pollution prevention programs.
7. The Advisory Committee recommends that the DTSC's pollution prevention program target industries and substances that may cause environmental or human health problems, rather than solely focusing on hazardous waste generation.
8. The Advisory Committee recommends that the DTSC's pollution prevention program achieve measurable environmental benefits.
9. The Advisory Committee recommends that all state agencies prepare and implement pollution prevention plans.
10. The Advisory committee recommends that Cal/EPA establish an agency-level pollution prevention program.

Potential Topics for Future Pollution Prevention Advisory Committee Discussions

The following list of topics will be considered by the Advisory Committee for its next year of work. (These topics will be grouped to reduce overlap.)

Focus on reducing chemical use, not just hazardous waste
Precautionary Principle
Pesticide use
Consumer responsibility (guilt)
P2 and consumer products
Manufacturers' responsibility for life cycle—take back
Product ban authority for DTSC/water board

Household, schools p2
P2 in local hazardous waste regulatory agencies
Comprehensive materials exchange
Multimedia p2 at agency level
Local government p2 plans
EMS systems
Green Business program—expand
Media campaign like non-smoking campaign
Enhance integration of local p2—inspection opportunities

PBTs (persistent, bioaccumulative, and toxic)
How to expand reach to others to help do the work
Focus on pollutant of concern
Focus p2 in communities with disproportionate share of environmental costs (“environmental equity”)
Agribusiness and p2
Adopt-a-state park program (litter)

P2 in hazardous waste generator training requirements

Connection between p2 and sustainability
The Natural Step (as a framework for sustainability)
Measurement of environmental benefits
Matrix on measurability of p2
Manufacturers’ responsibility for product liability per European Union model

Out-of-state exports analysis
Economic benefits of p2 to business and the public
Mandatory vs voluntary
Fees and impact on waste generated
Analysis of recycled materials; analyze what it takes to run a recycling facility; recycled oil

Funding in general
Funding p2 through enforcement penalties
\$10 million allocation
Grant program for pollution prevention

Long term role of SB 1916 AC
Early work on industry candidates for next round
Progress reports (agency to AC)
Time limits on recommendations, targets

Value of voluntary program
--Evaluate, per the requirements of SB 1916, whether it would be effective and feasible for DTSC to establish a "low-cost voluntary pollution prevention program".
New CA hazardous waste source reduction goal
--Health & Safety Code section 25244.15 requires DTSC to establish a new source reduction goal for California. DTSC wishes to receive advice from the Advisory Committee on how to establish this goal.

Chapter 1: Introduction

Pollution Prevention Report and Two-Year Workplan

Californians are concerned about the quality of their environment, and are vitally interested in ensuring that the generation and release of toxic and other hazardous substances is minimized. In response to this concern, the legislature has augmented the state's hazardous waste source reduction program, located within Cal/EPA's Department of Toxic Substances Control (DTSC).

The legislature also directed DTSC to convene a Pollution Prevention Advisory Committee to help determine how to target DTSC's pollution prevention resources. The Advisory Committee consists of ten public members representing diverse interests, and five *ex officio* members from relevant Cal/EPA boards and departments. Through a collaborative fact-finding and decision-making process, DTSC and the Advisory Committee evaluated source reduction progress in the state and developed this two-year work plan.

This report contains DTSC's workplan for pollution prevention activities over the next two years, as well as information about hazardous waste generation and environmental release data, criteria used for selecting target industries, proposed pollution prevention activities, economic and financial incentives for pollution prevention, and the status of DTSC-sponsored research into pollution prevention alternatives. The final chapter contains recommendations from the Advisory Committee.

DTSC has selected, with advice from the committee, a large and a small business industry category for special pollution prevention program focus. The two industry types are the petroleum refining industry and the auto repair industry. The presence of other Cal/EPA organizations on the committee will enable DTSC to consider more fully the multimedia issues that may be of concern for the selected industries.

Background

Source reduction (also known as "pollution prevention," or p2) is defined in California statute as:

- * any action that causes a net reduction in the generation of hazardous waste; or
- * any action taken before the hazardous waste is generated that results in a lessening of the properties which cause it to be classified as a hazardous waste.

As an overall environmental approach, pollution prevention stresses the importance of maximizing resource use, creating little waste, and using the least-hazardous materials as possible. While traditional regulatory programs focus on restricting releases or properly managing wastes after they are produced, pollution prevention focuses on the strategies that eliminate or reduce the creation of such wastes and pollutants. Those strategies include changing a production process in order to eliminate waste; changing the nature of a product so that the use of toxic input materials is avoided; improving purchasing practices, inventory control and housekeeping to preclude the generation of off-specification and outdated chemicals; and other strategies for reducing waste. The benefits of pollution prevention are many and include reduced costs to businesses, reduced need for regulatory oversight, reduced need for waste management

and landfill capacity, reduced worker exposure to hazardous waste and toxic materials, and reduced community and consumer exposure to toxic chemicals.

DTSC's Source Reduction Program

DTSC has operated its hazardous waste source reduction program since 1985. SB 685 of 1985 was the first legislation directing DTSC to establish a hazardous waste source reduction program, including administering a grant program for developing and demonstrating alternative technologies.

In 1989, California was one of the first states to enact facility source reduction planning legislation. This bill, the Hazardous Waste Source Reduction and Management Review Act (commonly known as "SB 14") requires that hazardous waste generators identify processes that generate hazardous waste, consider alternatives that would reduce or eliminate waste generation, select appropriate source reduction strategies for implementation, and establish a timeline to implement these strategies. Facilities subject to SB 14 also must report their source reduction and hazardous waste management progress over time.

Additional pollution prevention activities conducted by DTSC include providing support and resources to local pollution prevention programs, conducting research into p2 alternatives, developing printed p2 material for use by hazardous waste generators, training both industry and regulatory agency staff on p2, and integrating p2 into regulatory programs at the state and local levels.

New resources for DTSC's pollution prevention program

SB 660 of 1997 changed DTSC's fee structure, and in so doing identified additional resources for the pollution prevention program. \$1,050,000 was identified to annually augment source reduction activities beginning July 1, 1999. In 1998, a follow-up bill (SB 1916) specified activities and approaches for the additional funds. SB 1916 directed DTSC to:

- create the California Source Reduction Advisory Committee, which consists of ten public members and the executive officers of DTSC, the Air Resources Board, the state Water Resources Control Board, the Integrated Waste Management Board, and the Office of the Secretary (Cal/EPA) as *ex officio* members. (Appendix 1 on page 107 contains the minutes from the Advisory Committee meetings held to date.);
- prepare, in consultation with the Advisory Committee, a pollution prevention workplan that includes a summary analysis of hazardous waste generation and management patterns by SIC Code, waste stream and type of management method, and an outline of proposed pollution prevention activities for the next two years;
- develop model source reduction measures in generator categories that are identified in the biennial workplan, and then establish technical and outreach programs to promote and disseminate information about those model measures;

- establish an expanded program to train local hazardous waste enforcement agencies (Certified Unified Program Agencies, or CUPAs), small business development corporations, business environmental assistance centers and similar agencies in source reduction methods so they will be able to provide technical assistance to generators in applying these methods to their operations;
- evaluate available data to estimate the quantities of waste generated in the state by hazardous waste stream, the amounts generated by industry SIC Code, and the amounts generators sent offsite for management by management method;
- evaluate source reduction progress in the state;
- provide source reduction training and resources to CUPAs, small business development corporations, business environmental assistance centers, and other regional and local government environmental programs;
- select an industry category consisting primarily of large or technically complex businesses, as a focus for technical assistance;
- select an industry category consisting primarily of small business, as a focus for technical assistance. This activity is to be accomplished by working with local pollution prevention assistance providers, including CUPAs; and
- evaluate other states' voluntary pollution prevention programs in the interest of determining whether such a program is appropriate for implementation in California.

This report and workplan represents the end of the beginning of the SB 1916 process. Starting July 1, 2000, the next phase of implementation will commence. In addition to implementing the two-year workplan, DTSC will work with the Advisory Committee to evaluate the effectiveness of voluntary pollution prevention programs, as directed by SB 1916. In addition, numerous topics of interest were identified during this year's discussions. We anticipate many interesting discussions over the next two years as we explore these issues with the committee.

DTSC looks forward to its continued relationship with the Advisory Committee and greatly appreciates the time, energy, and effort each member has generously donated to help increase pollution prevention within California.

Chapter 2: Trends in California's Hazardous Waste Generation, 1993 to 1998

Introduction

An understanding of California's hazardous waste trends and the current status of waste generation is essential to designing an effective pollution prevention program. To further this understanding, DTSC staff reviewed available waste generation data. Three databases were evaluated for this analysis: the manifest tracking system (Haznet), the Toxics Release Inventory (TRI) data set, and Biennial Generator Report (BGR) data. The information within these databases is collected and maintained by DTSC as part of its responsibility to ensure that hazardous wastes are appropriately managed.

These three data sets report on different aspects of hazardous wastes and materials. Haznet data reflect offsite hazardous waste management and are based on information contained in shipping documents known as California Uniform Hazardous Waste Manifests (manifests). The Toxics Release Inventory captures information from users of specific hazardous chemicals and includes information on releases of those chemicals. The federal Biennial Generator System includes hazardous waste data collected from generators⁵ every two years, as the name suggests. In this reporting system, generators report the total quantity of RCRA hazardous waste generated, including aqueous waste that are managed onsite. Only wastes considered as hazardous under the federal system are included in this data set.

The purpose of this chapter is twofold: to examine hazardous waste generation trends over time (1993-1998⁶); and to evaluate whether California has met the statutory goal of a five percent per year reduction in hazardous waste generation⁷. In Chapter 3, we will examine in more detail the status of waste generation in 1998 (what waste was generated, which industries generated the waste, which facilities contributed the most waste, how the wastes were managed).

A Few Words About the Three Data Sets

To understand the analyses that follow, it is important to note the character, differences, and utility of the three data sets used here.

Manifest Data

A manifest, a form of shipping document, must be completed by generators when shipping hazardous waste offsite for management or disposal. The data within the manifest system come from information entered on manifests by these generators. Manifests contain information on the generator, transporter, and treatment facility, as well as information on the type of waste

⁵ The term **Agenerator**® will be used throughout this analysis to describe businesses or public sector entities that produce hazardous waste.

⁶In general, 1998 was the latest year for which data were available for this analysis.

⁷As specified in Health & Safety Code ' 25244.15(e)

(identified by California Waste Code) the quantity of waste, and how it was managed (treated, recycled, or disposed)⁸.

The manifest system is designed as a “cradle to grave” system to ensure that wastes arrive at the destination the generator intended, and is designed to track the movement and ultimate disposition of hazardous waste. DTSC enters data from all manifest copies received into an automated data system known as Haznet. Approximately half a million manifests are used annually.

Manifest Data Limitations

Interpreting manifest data depends on understanding and accounting for the limitations of this data set. Limitations pertinent to this analysis include:

- C the potential for double counting when wastes are collected via milkrun⁹ manifest to a transfer station, then shipped again from the transfer station to the treatment or disposal facility;
- C “modified” manifests¹⁰ are used to consolidate shipments of used oil destined for recycling;
- C the use of milkrun and modified manifests obscures the total number of hazardous waste generators (the total number of generators manifesting hazardous waste, discussed later in this chapter, will be undercounted due to this factor);
- C the exclusion of aqueous hazardous wastes that are treated on a generator’s site and subsequently disposed to a POTW (publicly owned treatment works) via an industrial sewer;
- C unit conversion factors that do not adequately account for the variance in density of the range of wastes shipped; and
- C variability in the use of California Waste Codes when completing the manifest.

A more complete list of limitations is contained in Appendix 3 (page 141). In this chapter, we have attempted to highlight, within the discussion, limitations that apply.

Toxics Release Inventory

The federally-mandated Toxics Release Inventory (TRI) tracks information about chemical releases, and contains information much broader than just hazardous waste. Facilities reporting under TRI are primarily manufacturers, although a recent (1998) addition now requires reporting by waste management facilities and utilities.

TRI requires reporting only for specific chemicals, identified in the data by the Chemical Abstract Service (CAS) number or chemical category. Releases to all environmental media are reported, including onsite releases to air, water, and land, and offsite transfers to disposal, treatment, energy recovery and recycling. (Appendix 4 on page 144 contains detailed

⁸ A list of California Waste Code titles is contained in Appendix 2 (page 139).

⁹ Milkrun manifests are used by hazardous waste haulers to transport smaller amounts of wastes from numerous small quantity generators.

¹⁰ “Modified manifests” are used to consolidate used oil shipments to recycling.

information on the various reporting categories within TRI.) This analysis will focus on offsite transfers as a surrogate for hazardous waste generation.

The reported chemical releases are based on estimates, rather than actual measurements, and are reported as pounds of pure chemical, not mixtures, as is the case in the manifest and the Biennial Generator Report (BGR; discussed below) data.

Facilities with more than 10 employees that meet the following reporting thresholds are required to report under TRI:

- 1) greater than 25,000 lbs of the listed chemical manufactured or processed onsite; or
- 2) greater than 10,000 lbs of the listed chemical otherwise used at the facility.

TRI Data Limitations

TRI is not a comprehensive reporting system; many major industries as well as other important sources of chemical releases are not covered by TRI. Moreover, many toxic chemicals are not included in TRI. TRI only tracks chemical releases or transfers; it does not include information on the exposures people may experience as a result of chemical use or releases. There is no simple way to compare waste generation information between Haznet and TRI because one includes water and soil, and the other is pure chemical. Also, it is important to remember the difference in units; manifest (and BGR) quantities are in tons, TRI in pounds.

Data may not be available on smaller businesses due to reporting threshold levels being too high to capture the smaller generators. Finally, some chemicals released may not be reported due to not meeting threshold levels.

Biennial Generator Report Data

Hazardous waste generators are required under federal law to report, every two years, the total amount of hazardous waste generated. In actuality, these data are only collected from generators producing more than 5 tons per year. The analyses that follow only RCRA¹¹ waste; nonRCRA waste is not included in this data set.

Differences between manifest and BGR data

Again, there are important differences between these data sets that must be kept in mind when evaluating the data. Unlike manifest data, Biennial Generator Report data include aqueous hazardous waste that is treated onsite and disposed to the sewer (generally to a publicly owned treatment works, under a permit from the sewerage agency). Because these large quantities of mostly water are converted to tons, this significantly increases the total tons of wastes reported in the BGR, as compared to manifest data. Tonnage is calculated by converting gallons, liters, pounds, kilograms, metric tons, and cubic yards into tons.

¹¹ A RCRA waste is a waste considered as hazardous under the federal Resource Conservation and recovery Act. A large percentage of waste manifested in California, perhaps over 50%, is nonRCRA waste. NonRCRA wastes are designated hazardous because of California's more stringent hazardous waste classification scheme.

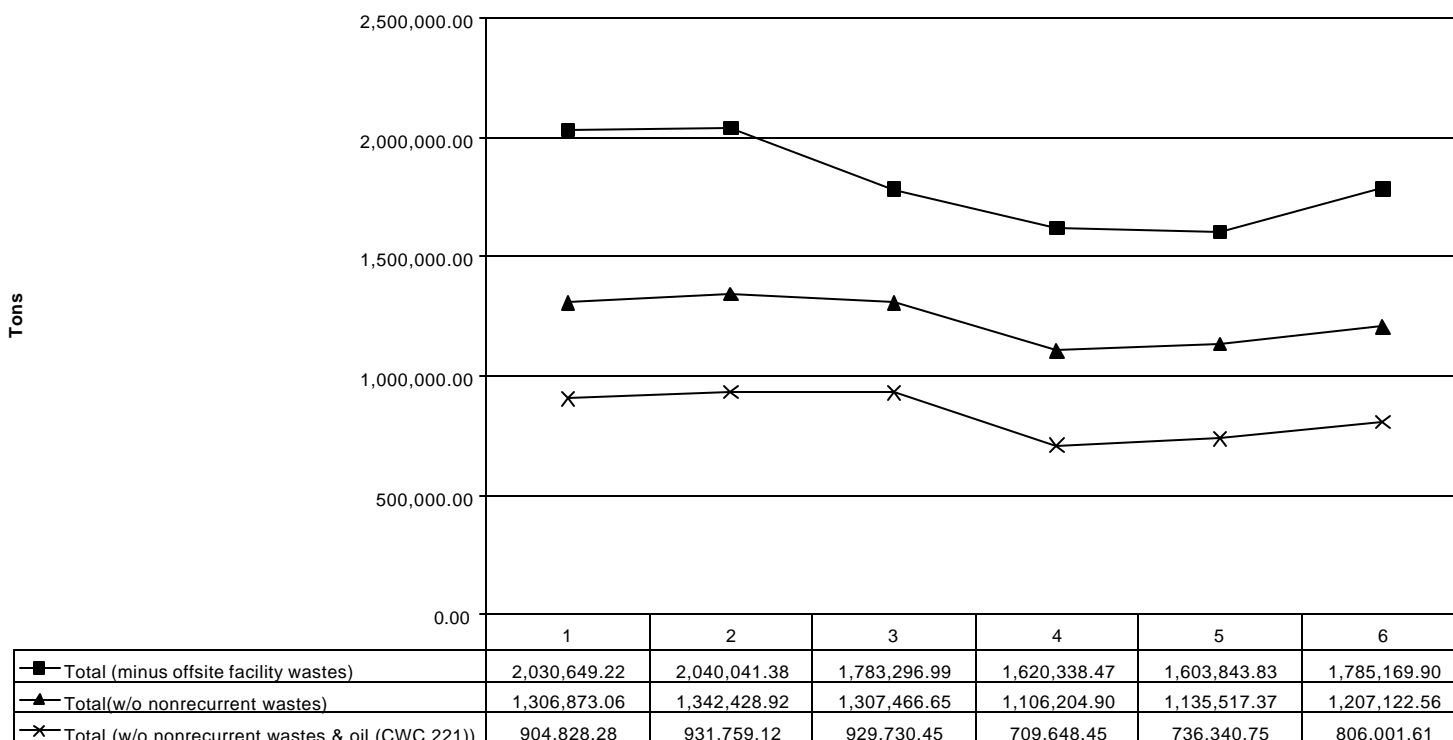
Finally, it should be noted that due to data quality problems, this analysis will only focus on the Biennial Report data for 1997. Previous Biennial Generator Report data are unreliable and therefore will not be presented here.

Hazardous Waste Generation Trends, 1993-1998

Haznet Data

The top line in Figure 1 below shows the total amount, in tons, of hazardous waste manifested in California from 1993 through 1998. While the total generated in 1998 was 12% less than in 1993, the current trend is increasing: waste generation rose 11% from 1997 to 1998.

Figure 1: Manifested Hazardous Waste, 1993-1998



To gain a better understanding of what happened, we subtracted “nonrecurrent” waste from the total, to derive the middle line in Figure 1. Nonrecurrent wastes are those that are not routinely generated. Nonrecurrent wastes are hazardous wastes that come from operations such as contaminated site cleanups, removing PCB-contaminated equipment, and asbestos. We also included “household hazardous waste” in this category, to maintain a focus on industrial hazardous waste generation. For this analysis, we define recurrent wastes as the total quantity of

manifested waste minus non-recurrent waste.¹² Recurrent waste generation declined 8% from 1993 to 1998--from 1,307,000 tons in 1993 to 1,207,000 tons in 1998. (The bottom line in Figure 1 represents the total wastes minus nonrecurrent waste and waste oil/mixed oil, and will be discussed further later in this chapter.)

To further evaluate these trends, DTSC staff looked at data entry procedures to see whether they could have affected the trend. Data entry procedures changed significantly between 1995 and 1996, which coincides with a decrease in recurrent waste generation. A review of the change in procedures indicated that the new procedures should not have caused the change in quantities shown in the analysis beginning in 1996. However, the data prior to 1996 is likely to be less accurate, as its accuracy is unknown. The new procedures ensured that from 1996 forward, the data are 99.95% accurate. Accuracy, in this context, refers to how accurate data entry personnel are in transferring the information from the actual manifest to the data system. The limitations inherent in the manifest system discussed earlier in this chapter still apply.

Hazardous Waste to Transfer Stations—Potential for Double-Counting Waste

Table 1 below shows the amount and percentage of recurrent wastes sent to transfer stations, over time. The amounts of waste going to transfer stations could represent a quantity that is double-counted—that is, the waste could be counted once when moving from the generator to the transfer station, and again when transported from the transfer station to the treatment or disposal facility. Note that although the percentage of waste to transfer stations has increased over time, it has remained relatively constant from 1996 through 1998. This means that the waste generation trends shown in Figure 1, particularly for years 1996 through 1998, are not significantly affected by the fact that some percentage of the total waste may be double-counted.

Table 1: Hazardous Waste Manifested to Transfer Stations

Year	Tons of recurrent waste to transfer stations	Percent of total recurrent waste
1993	63,191	5.11%
1994	103,172	8.01%
1995	123,284	9.54%
1996	137,483	12.73%
1997	130,124	11.58%
1998	151,577	12.73%

¹²Wastes included in the non-recurrent category include California Waste Codes (CWC):

151 asbestos-containing waste,
261 polychlorinated biphenyls and material containing PCBs,
611 contaminated soil from site clean-up, and
612 household waste

Nonrecurrent Waste

Nonrecurrent wastes consistently comprise a significant portion, ranging from 26% to 35%, of California's total manifested waste. Nonrecurrent waste is not considered to be amenable to source reduction, since it is generally not produced as a part of ongoing business operations. Some nonrecurrent hazardous waste generation reflects efforts to clean up contaminated properties for re-use. Another example of “beneficial” hazardous waste generation is when a facility replaces its light ballasts with energy-efficient ones. In such circumstances, there is a short-term increase in hazardous waste generation; the environmental benefits of the activity are realized over a longer time frame. In addition, the environmental benefits of these activities are much broader than those related specifically to hazardous waste generation. For example, the environmental benefits of a widespread conversion to energy-efficient lighting systems will result in air quality improvements, reduced need for energy generation, and reduced costs for consumers.

Number of Generators

The number of hazardous waste generators has increased 48% since 1993. Between 1996 and 1998 there was an almost 16% increase in the number of generators.

Table 2: Changes in the Number of Generators, 1993 to 1998

Year	# of generators
1993	42,500
1998	63,000

Remember that, because of milkrun and modified manifesting options, these numbers may be significantly understated. In addition, more waste types are now eligible for milkrun manifesting, further increasing their use and exacerbating the system’s difficulty in accurately identifying all hazardous waste generators.

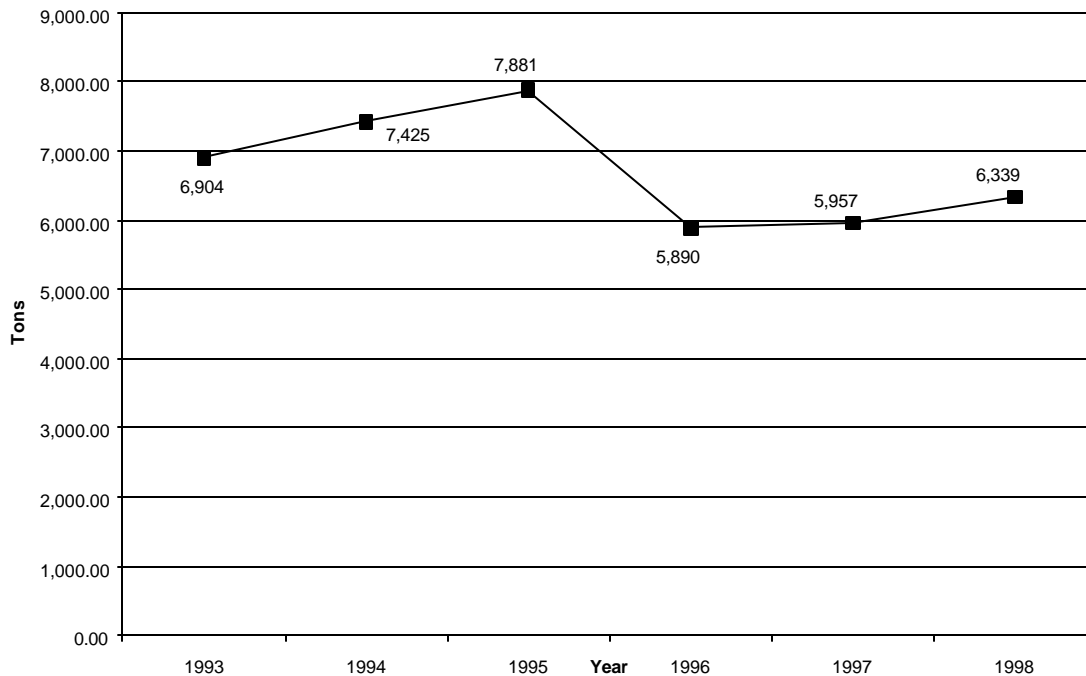
With such an increase in the number of generators, it would be logical to expect an increase in the total quantity of waste generated. The effect of the increase of the generator universe was examined closely.

Trends for generators of large quantities of recurring waste

The largest-quantity hazardous waste generators consistently contribute about 53% of the total recurring waste generated in the state. Figure 2 below shows that the state’s largest generators have not significantly altered their relative contribution to the state’s hazardous waste stream.¹³

¹³The Atop 100" facilities from 1998 were not necessarily the same facilities that were the Atop 100" in 1993. A determination of which facilities appear up on both lists was not made for this report.

Figure 2: Average Tons Per 100 Largest-Volume Generators

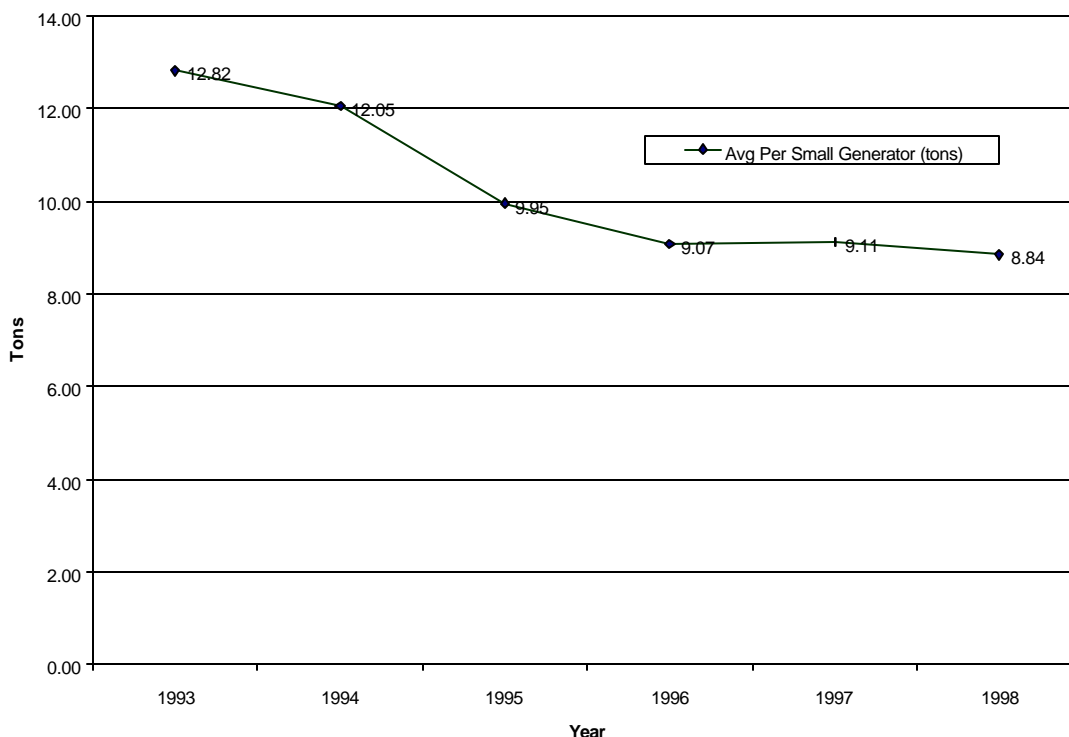


Looking at the average difference, you can see that between 1993 and 1998, the average per generator, for the larger-quantity generators, was reduced by about 8% between 1993 and 1998—less than 2% per year. Clearly, California’s larger generators are not meeting the state’s 5% per year hazardous waste reduction goal.

Trends for Smaller Quantity Generators of Hazardous Waste

Figure 3 shows waste generation trends for the 47% of the total recurrent waste manifested by entities that are not one of the “top 100” generators of hazardous waste. The relatively small quantity per generator is a function of the enormous number of entities manifesting hazardous waste in California—over 60,000. Because of the uncertainties around the total number of these generators, created by the use of milkrun and modified manifests, DTSC does not believe that this reduction in the “average” tons per generator can lead to any conclusions about whether these generators are implementing source reduction or reducing waste generation over time.

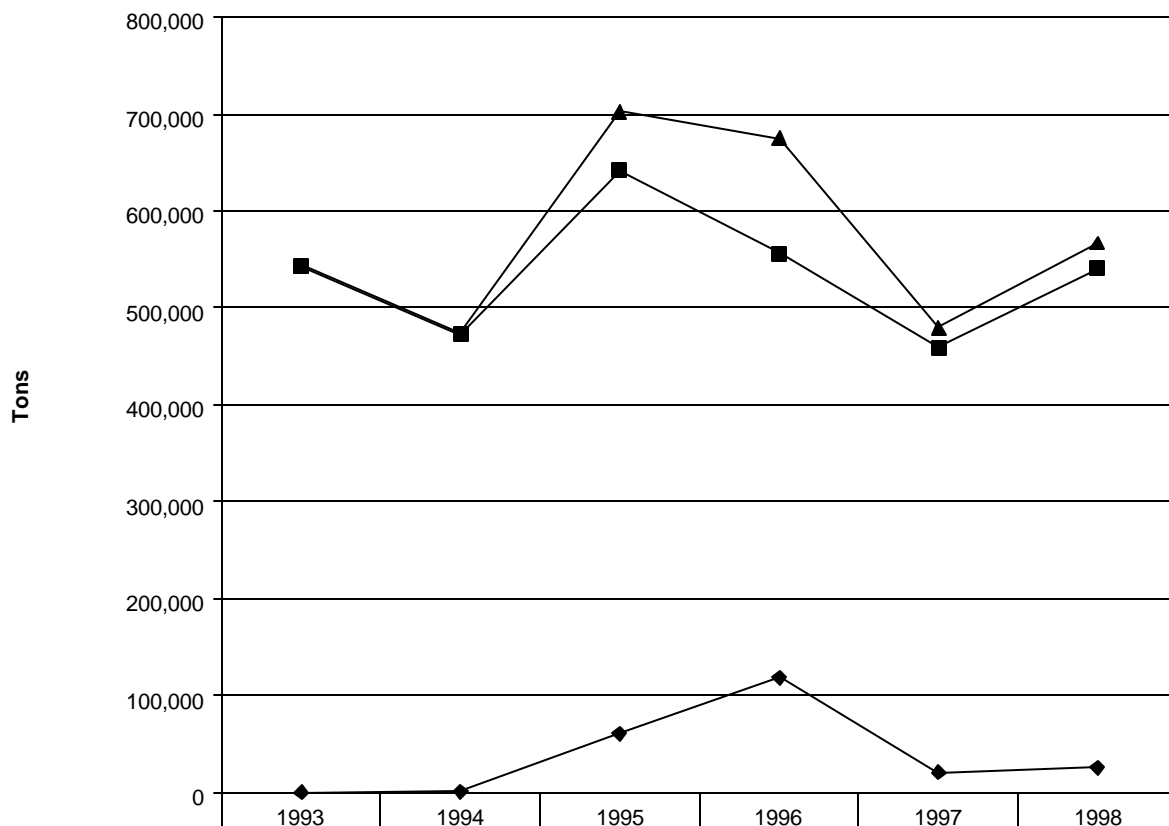
Figure 3: Average Per Small Generator (tons)



Trends For Out of State Waste Shipments

Wastes are shipped out of California are tracked in one of two ways: for states that maintain their own hazardous waste manifest systems, DTSC tracks other state manifest returns in a database called “OSMAN”—“out of state manifests”. If the hazardous wastes are shipped to a state with no tracking system, the generators apply a special code in the California system. Figure 4 shows the OSMAN data, the California manifest code for out of state shipments, and those two data sets added together, to get an idea of total out of state shipments. Note that these data include all wastes—recurrent, nonrecurrent, and treatment, storage and disposal (TSD) facility wastes. Therefore, this analysis includes waste quantities that have been excluded from some or all of the other analyses in this chapter. These figures cannot be added to the quantities shown in Figure 1, since they include waste categories that have been eliminated from that analysis.

Figure 4: CA Out of State Waste Shipments, 1993-1998



Waste Oil and Mixed Oil

Waste oil and mixed oil are consistently a significant portion of California's total recurrent hazardous waste generation. The percentage of waste/mixed oil relative to the total ranges from 31% to 36% (1996). This is consistently California's single largest waste stream, and appears to be predominantly engine motor oil destined for recycling.

Recurrent Waste Trends

As we saw in Figure 1, total recurrent waste generation is currently on an upward trend. Figure 1 also shows manifested recurrent waste minus waste oil and mixed oil (bottom line), to more

accurately indicate waste generated from the manufacturing sector. Again, we see a dip (-24%) in waste generation between 1995 and 1996, with continued increases after that time.

A closer look at the data revealed that three groups of wastes have primarily contributed to the decrease: Inorganics, Miscellaneous, and Solids. Aggregated, these three groups decreased from 608,000 tons in 1995 to 404,000 tons in 1996, a 33% decrease. These three groups account for 92% of the reduction depicted in Figure 2.

Excluded hazardous waste

Numerous hazardous wastes, both RCRA and nonRCRA, were excluded from designation as a hazardous waste between 1993 and 1998. Some of these exclusions were established in order to conform with exclusions that occurred at the federal level. Examples of RCRA wastes that were excluded include:

- C excluded scrap metal [261.4 (a)(13)]
- C shredded circuit boards [261.4(a)(14)]
- C residues of waste in empty containers [261.7(a)(1)]
- C residues derived from the burning or processing of hazardous waste in an industrial furnace [266.112]

Examples of nonRCRA excluded wastes include:

- C intermediate manufacturing process streams [Health & Safety Code section 25124(c)(1)]
- C acetic acid [25145(b)(2)(B)]
- C potassium chloride [25145(b)(2)(B)]
- C wastes from the extraction, beneficiation, and processing of ores and minerals [25143.1(b)(1)]
- C wastes containing silver [25143.13]
- C dry cell batteries [25216]
- C used chlorofluorocarbon refrigerants [(b)(4)]

Appendix 5 contains a complete list of the wastes excluded between 1993 and 1998. The rationales for excluding specific wastes vary widely. A waste may be excluded because new scientific research indicates that a substance is not as dangerous as previously thought. Another rationale would be to remove regulatory barriers to recycling hazardous wastes within a manufacturing process. Some wastes may be excluded because another agency is adequately regulating the waste. Because these excluded wastes do not correlate with the manifest codes, it is very difficult to evaluate the effect of these exclusions on waste generation. Such an analysis was deemed outside the scope of this report.

Analysis of Toxic Release Inventory Data

The number of TRI filers in California has decreased slightly over time, as has the number of chemical releases reported, as seen in Table 3.

Table 3: Number of TRI Filers in California

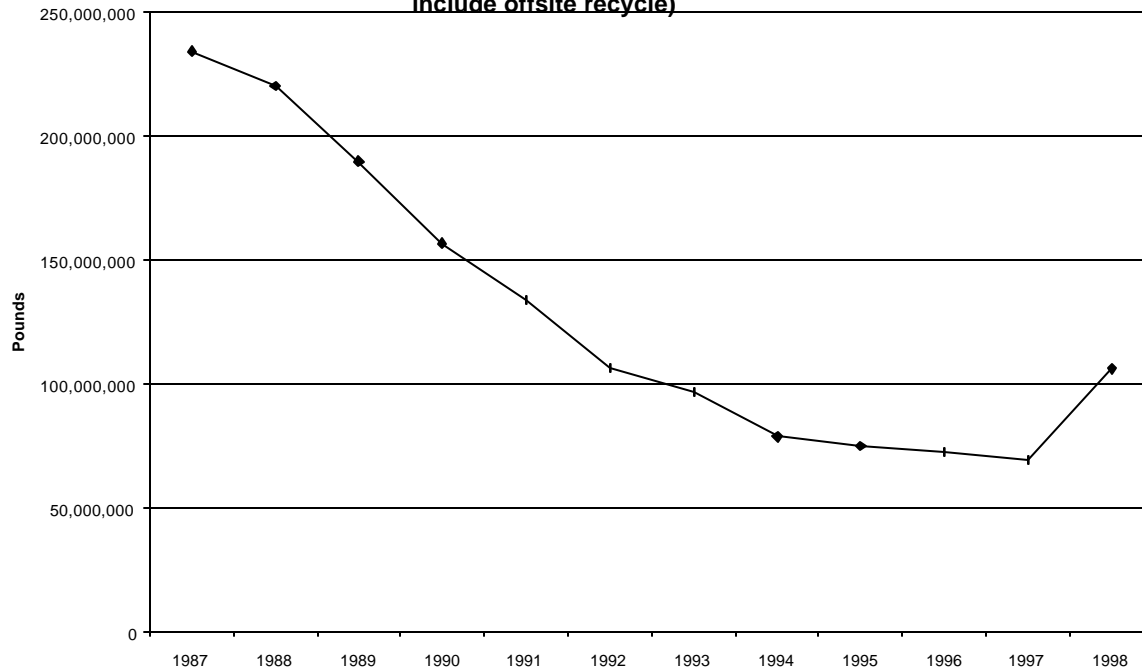
Year	# of Facilities Reporting	# of Chemicals Reported
1987	1,915	5,251
1988	2,117	6,119
1989	2,156	6,443
1990	2,161	6,267
1991	2,042	5,939
1992	1,952	5,497
1993	1,852	5,084
1994	1,683	4,509
1995	1,553	4,177
1996	1,375	3,739
1997	1,393	3,844
1998	1,377	4,393

(source: DTSC intranet site)

Total Releases

Total TRI releases have decreased over time. Figure 5 shows a marked decrease in TRI releases from 1987 to 1998. Note that while in general this report focuses on trends from 1993 to 1998, Figure 5 begins in 1987, in order to present a fuller picture of TRI releases. The dramatic initial decreases in chemical releases illustrate the power of public data to motivate reductions in waste generation and pollutant releases. It may also reflect problems with accuracy in the initial years of this reporting requirements, as well as later decisions to exempt certain chemicals from this data set.

Figure 5: Total TRI Releases to All Environmental Media, 1987-1998 (does not include offsite recycle)

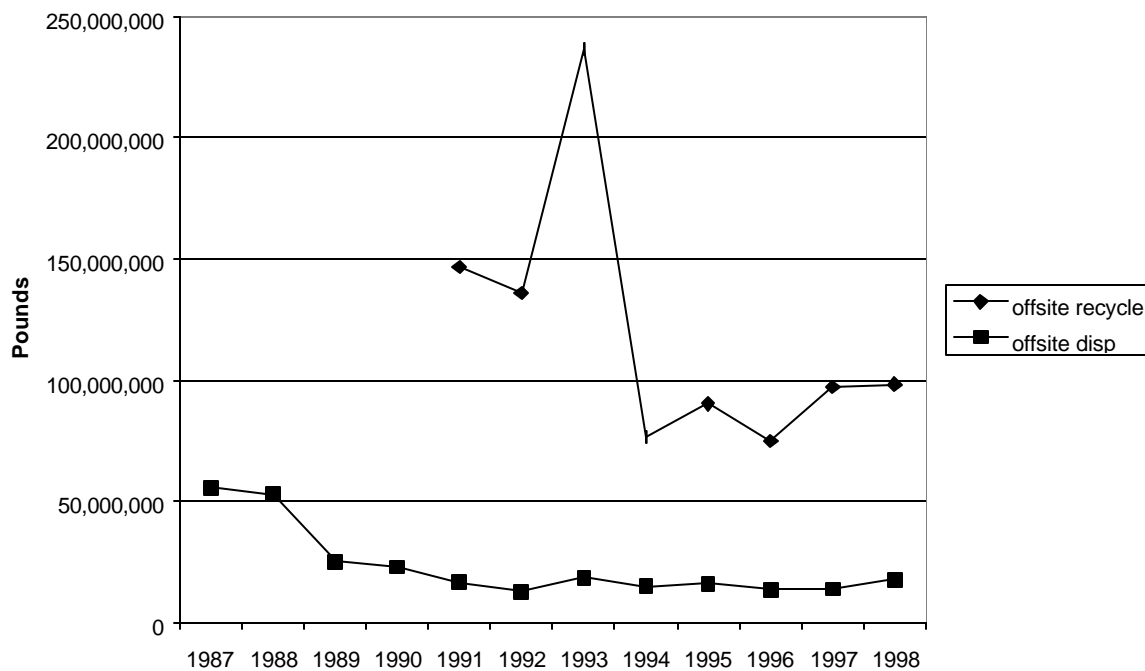


While 1998 releases are 55% percent of the baseline TRI year of 1987, note the significant upward tick from 1997 to 1998; releases in 1998 increased 53% from 1997. The addition of offsite waste management facilities to this data set was responsible for the increase. Specifically, the data submitted from three landfill facilities, the Laidlaw Environmental Buttonwillow facility, the Chemical Waste Management Kettleman Hills facility, and the Laidlaw Environmental Westmoreland facility caused the trend to go up. Removing land disposal facilities from the total reveals that emissions are actually continuing a leveling-off trend.

Offsite Disposal

Figure 6 shows decreases in TRI releases to offsite disposal, and changes in offsite recycling quantities over time. (Filing for categories “offsite-disposal” and “offsite-recycling” was not required until 1991.) These include the materials that would be considered as hazardous waste. Additional analysis indicates that the increase in recycling from 1992 to 1993 most likely comes from refineries (SIC 2911).

Figure 6: Offsite Disposal, Offsite Recycling, TRI Data



Biennial Generator Report

As mentioned earlier in this chapter, historic Biennial Generator Report data is considered unreliable; therefore, there will be no trend analysis for that data set. However, according to the U.S. EPA's evaluation of these data, which only includes reported RCRA waste, California ranks 12th in the nation with regard to total waste generated (672,946 tons of RCRA waste). California generates 1.7% of the nation's total RCRA waste. U.S. EPA also reports that California has the second largest number of RCRA waste generators, at 1,782, with 8.8% of the nation's total.

Hazardous Waste Source Reduction Progress in California

Health and Safety Code section 25244.15 states that "it is the purpose of this article to reduce the generation of hazardous waste in California by 5 percent per year from the year 1993 to the year 2000." Measuring pollution prevention accurately is a tremendously difficult task, and can only be done in a disaggregated sense; that is, the more specific and focused the analysis, the more accurate. Conversely, aggregating data from a broad variety of industry and facility types dilutes the accuracy of any conclusions.

In addition, an accurate analysis of pollution prevention progress relies on developing some sort of mechanism to normalize the data. Without normalization, factors such as increased (or decreased) production rates, changes in the number of generators, and other similar changes in production patterns skew the data, rendering interpretation difficult. Making matters more

difficult is the lack of a standard normalization factor across industry. What might make sense for one industry type (for example, amount of waste per gallon of paint produced) would be meaningless to another (a job-shop metal plater). The problems inherent in normalizing waste generation make it very difficult to determine the causes of changes in waste generation over time.

Despite these difficulties, and with them in mind, we can get an overall picture of hazardous waste generation over time, and some indications of source reduction progress. Figure 7 compares the total manifested waste from 1993 to 1998 to the 5% per year goal stated in law. Clearly, although California appeared to be meeting the goal from 1993 through 1997, the increase in waste generation in 1998 caused the 5% per year reduction goal to not be met.

Figure 7: Figure Total and Recurrent Wastes vs. 5% Reduction Goal

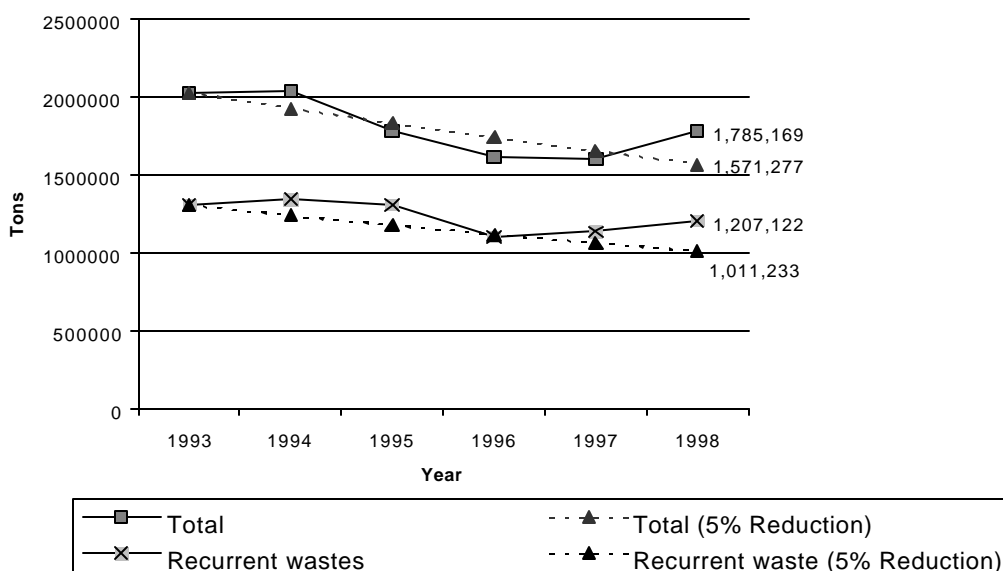
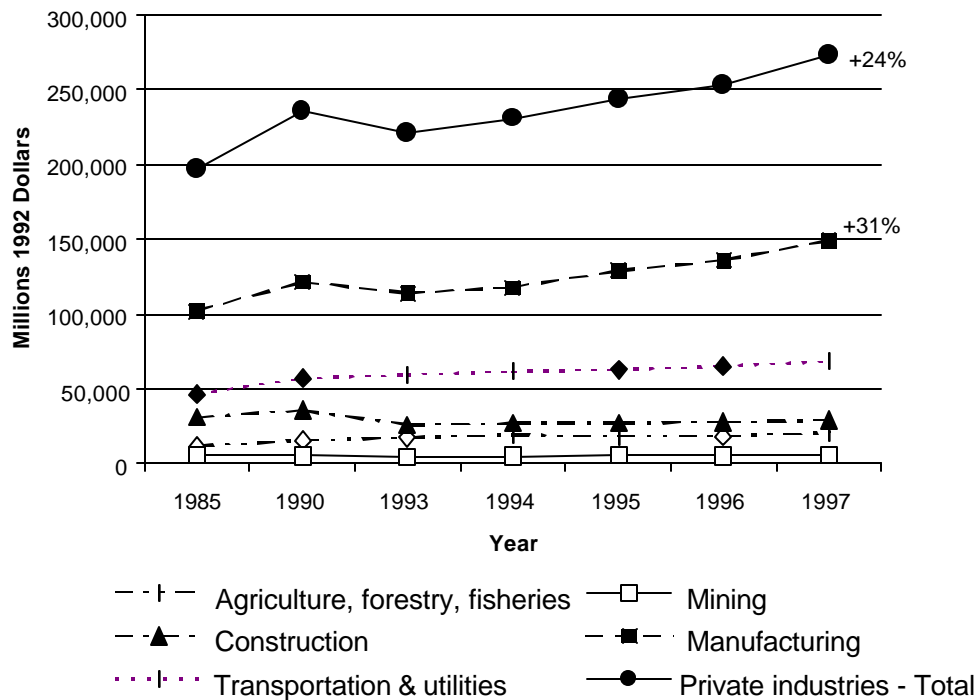


Figure 7 also shows the comparison to the 5% goal using only recurrent wastes (rather than the total). It is interesting to note that the upward trend actually starts a year earlier when nonrecurrent waste is eliminated from the analysis.

The 48% increase in the number of generators of recurrent hazardous wastes from 1993 to 1998 is likely due to a combination of factors. These factors include increased economic activity in California and implementation of local hazardous waste regulatory programs, which may have brought more businesses under the hazardous waste regulatory umbrella. Figure 8 depicts increases in economic activity of some sectors in California.

Figure 8: Gross State Product Selected Years, (Millions of 1992 \$)



Reaching absolute conclusions about California's progress in reducing hazardous waste generation is difficult, given the limitations of available data. The most important, and certainly the most accurate, finding is that hazardous waste generation has decreased, and is now on an upward trend. California has not met its 5% per year hazardous waste reduction goal, in terms of the total tons of waste shipped off-site (manifest data); nor has it been met in terms of total pounds of chemicals sent to disposal (TRI). This calls for renewed vigor in evaluating alternatives to generating waste, and implementing pollution prevention in California.

Chapter 3: Current Status of Hazardous Waste Generation

In Chapter 2, we looked at the trends in hazardous waste generation and Toxics Release Inventory releases over time. For pollution prevention program planning purposes, it was necessary to take a closer look at the situation as it currently exists. Four questions emerged:

- C What waste streams are generated?
- C What industries generate the waste?
- C How are wastes managed?
- C Which facilities generate the most waste?

This chapter will focus on these four questions. 1998 data will be used to investigate these questions, as it is the last complete year for which these data are available (1997 for Biennial Report System data).

What waste streams are generated?

All hazardous wastes—both RCRA and nonRCRA—are manifested in California according to California Waste Codes (CWC). As discussed in the previous chapter and in Appendix 2, these codes range from somewhat specific to very general. The range of materials that are actually manifested in any given CWC may vary widely from facility to facility, or within a single facility over time. Table 4 gives some examples, to illustrate the kinds of wastes that are classified within some of the commonly-used California Waste Codes.

Table 4: Examples of Wastes Transported Under California Waste Codes

(NOS = “not otherwise specified”)

CWC	Waste Code Descriptor	Example Waste Streams
123	Unspecified alkaline solution	ammonium copper chloride, ammonium hydroxide sodium hydroxide copper tetraamine dichloride
135	Unspecified aqueous solution	non-RCRA hazardous waste liquid, (non-DOT regulated) hazardous waste liquid NOS, (cadmium, silver) (chromium, zinc) non RCRA Hazardous waste liquid NOS, (water, oil)
162	Other spent catalyst	non-RCRA hazardous waste, solid (spent catalyst) (spent nickel moly catalyst) self-heating solid, inorganic, NOS (spent catalyst w/arsenic)
181	Other inorganic solid waste	environmentally hazardous waste substance solid NOS (nickel, cadmium) hazardous waste solid, NOS, (mercury) (fluorescent light tubes) (steel and garnet blast)
214	Unspecified solvent mixture	waste flammable liquid, NOS (lead, petroleum distillates) (toluene, xylene) (methanol, toluene) waste paint-related material
223	Unspecified oil-containing waste	non-RCRA hazardous waste liquid (oil and water) (mop and deburring water) waste flammable liquid, NOS (gasoline, jet fuel, crude oil)
252	Other still bottom waste	MEK, chromium non-RCRA hazardous waste liquid, still bottoms non-RCRA hazardous waste, liquid paint solids with toluene, xylene

343	Unspecified organic liquid mixture	hazardous waste liquid NOS (ethylene glycol) waste styrene monomer, inhibited waste flammable liquid, corrosive NOS, (alpha picoline) hazardous waste liquid NOS (benzene, tetrachlorethylene)
352	Other organic solids	non-RCRA hazardous waste, solid (rags w/soil and oil) (oily debris)
491	Unspecified sludge waste	hazardous waste solid NOS, (cadmium, chromium) wastewater screenings, filtercake and phosphate sludge, non-hazardous waste solid non-RCRA hazardous waste, solid (filter cake, baghouse debris)

For the top ten waste streams (by quantity), Table 5 shows the relative contribution of each California Waste Code to the total recurrent wastes manifested in 1998.

Table 5: Percent of Recurrent Waste, by Waste Group, in California in 1998 (manifest data)

Waste Type (CWC)	Tons	% of Recurrent Waste
Waste oil and mixed oil (221)	401,121	33%
Other inorganic solid waste (181)	170,904	14%
Other organic solids (352)	92,258	8%
Auto shredder waste (613)	66,137	5%
Aqueous solution with total organic residues <10% (134)	64,136	5%
Unspecified oil-containing waste (223)	56,322	5%
Unspecified aqueous solution (135)	32,527	3%
Oil/water separation sludge (222)	30,106	2%
Metal sludge (171) (see 121, Alkaline solution w/metals)	24,998	2%
Unspecified organic liquid mixture (343)	20,600	2%
Aqueous solution w/metals (132) (< restricted levels; see 121)	20,238	2%
Total	979,347	81%
Grand total	1,207,123	100%

Waste oil (CWC 221, waste oil & mixed oil) dominates recurrent wastes, contributing 33% of the total amount of recurrent waste in California. The next largest waste stream is CWC 181 (Other Inorganic Solid Waste) at 14% of the total.

Which industries generated the waste?

Understanding which industry types generate more or less waste is important for pollution prevention program planning. Pollution prevention programs can leverage resources by targeting industry types that both generate large quantities of waste (large potential for reduction) and that utilize similar processes across the industry (providing a focal point for research and assistance). The three data sets available for this analysis were evaluated by Standard Industrial Classification (SIC) codes, to determine which industries generate waste. SIC codes provide information about businesses' primary industrial sectors.

Manifest data by industry type

SIC Codes have not routinely been collected and entered into the manifest system. For this analysis, SIC codes obtained from other databases were assigned to the manifest data. Because of problems with the data, only about half (52%) of the records in Haznet could be assigned SIC information, rendering the information in Table 6 incomplete and potentially inaccurate. Haznet SIC information is presented here as a possible snapshot of the industrial sectors generating hazardous waste in California. DTSC is currently revising its manifest system to ensure that SIC codes are routinely collected so that future data analyses will contain more accurate information about industry sectors. Throughout this chapter, the discussions of manifest data refer to the subset with nonrecurrent wastes removed; in other words, we will be talking about recurrent wastes unless otherwise specified.

Because only 52% of the records contain SIC information, it follows that the highest percentage of waste manifested, by quantity, has a blank SIC Code (48%). The next largest percentage of wastes (8%) is generated by SIC Code 4200, Trucking and Warehouse. It is likely, however, that this is not an accurate reflection of this sector's waste generation. It would be more likely that these wastes are generated by other businesses and are being transported by this sector; i.e., milk run manifests of used oil. Table 6 below shows the contribution of each SIC Code to the total, to the extent that SIC codes are available in this data set.

Table 6: Percent of Each SIC Code to Manifest Total, 1998 Manifest

Note: figures are rounded.

SIC	SIC Code Description	Tons	%
	Blank	573,500	48%
4200	Trucking and warehousing	99,700	8%
291	Petroleum refining	63,200	5%
971	National security	58,800	5%
367	Electronics Components and Accessories	46,600	4%
491	Electric services	22,000	2%
372	Aircraft and Parts	20,600	2%
347	Coating, Engraving, and Allied Services	17,400	1%
376	Guided Missiles and Space Vehicles and Parts	16,400	1%
3400	Fabricated metal products	15,000	1%
478	Miscellaneous Transportation Services	11,500	1%
4900	Electric, gas, and sanitary services	10,000	1%
357	Computer and Office Equipment	8,000	1%
3600	Electric and electronic equipment	8,000	1%
282	Plastics Materials and Synthetic Resins	8,000	1%
554	Gasoline service stations	7,600	1%
283	Drugs	6,900	1%
286	Industrial Organic Chemicals	6,700	1%
371	Motor Vehicles and Motor Vehicle Equipment	6,400	1%
401	Railroads	6,300	1%
	Total for Top 20	1,012,600	85%
	Grand Total	1,191,100	100%

California's Toxics Release Inventory Releases by SIC Code

Table 7 shows the SIC codes responsible for TRI total releases, and releases to offsite disposal and offsite recycling. The table is ordered by offsite disposal, and reported in pounds. From the perspective of industrial targets of routinely-generated waste the sectors of most importance are secondary smelting, agricultural chemicals, and petroleum refining.

**Table 7: California's TRI Largest Emitters by SIC Code;
Sorted by Offsite Disposal, 1998**

SIC	SIC Description	Total	%	Off-disp	%	Off-rec	%
3341	Secondary smelting and refining of nonferrous metals	4,461,765	8.0%	4,328,984	35.4%	1,189,942	5.6%
4953	Refuse Systems	27,615,113	49.8%	1,349,164	11.0%	16,016,198	74.8%
2879	Agricultural Chemicals, NEC	1,329,241	2.4%	1,233,983	10.1%	957,912	4.5%
2911	Petroleum refining	16,763,577	30.2%	1,200,390	9.8%	483,730	2.3%
3764	Space Propulsion Units And Parts	1,028,337	1.9%	989,066	8.1%	447,350	2.1%
3369	Nonferrous Foundries, NEC	899,907	1.6%	897,125	7.3%	323,031	1.5%
3624	Carbon And Graphite Products	640,466	1.2%	640,461	5.2%	0	0.0%
2833	Medicinals And Botanicals	608,860	1.1%	601,600	4.9%	1,053,000	4.9%
2821	Plastics Materials And Resins	1,627,223	2.9%	531,549	4.4%	615,750	2.9%
9511	Air, Water & Solid Waste Management	458,651	0.8%	444,621	3.6%	333,516	1.6%
	Totals	55,433,140	100%	12,216,943	100%	21,420,429	100.0%

BGR Data by SIC Code

The total quantity of waste generated in California in 1997, as reported to this data set, was 23,102,000 tons, which includes all reported waste. For this analysis, only generators of greater than 10,000 tons were included. After excluding offsite hazardous waste treatment, storage or disposal (TSD) facilities, a total of 94 generators generated a total of 21,704,000 tons (94% of the total waste). Table 8 shows a ranking of these categories of facilities grouped by SIC Code.

Table 8: SIC Codes for California Generators >10k tons, 1997 BGR*

SIC	Industry Type	Tons	%
2911	Mfg. - Petroleum Refining	14,156,000	65.2%
3672	Mfg. - Printed Circuit Boards	2,702,000	12.4%
3674	Mfg. - Semiconductors and Related Devices	1,493,000	6.9%
3572	Mfg. - Computer Storage Devices	746,000	3.4%
0	Unknown	580,000	2.7%
3471	Mfg. - Plating and Polishing	538,000	2.5%
	TOTAL	20,215,000	93.1%
	GRAND TOTAL	21,705,000	100.0%

*All other SIC groups were <2% of the total.

How were the wastes managed?

When shipping hazardous wastes under a manifest, generators must include a designation of the type of waste management method that will be used at the final destination. An understanding of existing waste management strategies is essential for understanding hazardous waste issues. In 1998, recycling was the most prevalent method for managing hazardous waste in California,

accounting for 48% of the manifested waste total. Table 9 shows each management method's relative percentage of the total.

Table 9: Hazardous Waste Management Methods in California, 1998 Manifest

Method*	Tons of Waste	% Waste Managed
Recycling	572,111	48%
Disposal (includes landfill, "other")	282,787	24%
Transfer Station	151,577	13%
Unknown (no disposal code)	96,282	8%
Treatment, tank	80,000	7%
Treatment, incineration	9,000	1%
Total	1,191,757	100%

* Surface impoundments, land application, injection well, and invalid disposal code quantities were <1% each.

Transfer stations accounted for 13% of the total wastes managed in 1998. The majority (61%) of the wastes being received by transfer stations is waste oil (CWC 221), which usually is recycled.

Hazardous wastes shipped out of state

Out of state waste shipments are tracked under the manifest system of the state receiving the waste. Not all states, however, maintain their own manifest tracking system. Hazardous wastes sent from California to one of these states (without a tracking system) are tracked under California's manifest system. In 1998, 396,564 tons of recurrent waste were shipped out of California to a state without a tracking system. An additional 25,873 tons were shipped under other states' manifests and tracked in a separate database, for a total of 422,437 tons.

Hazardous Waste Management - Disposal

Table 10 shows the top five industry types disposing hazardous wastes to landfill¹⁴.

¹⁴ The tables in this chapter show only what appear to be the significant industries or facilities; therefore, the number of industries or facilities shown may vary from table to table.

Table 10: Top 5 Industry Types Disposing to Landfill, 1998 Manifest

SIC	Standard Industrial Classification Description	Tons	Per Cent
	Blank	120,400	50%
2911	Petroleum refining	37,680	16%
4911	Electric services	12,750	5%
9711	National security	6,720	3%
3764	Space propulsion units and parts	4,500	2%
	Total for Top 5	182,050	76%
	Total	241,114.56	100%

In 1998 the largest waste stream manifested for disposal was CWC 181 (other inorganic solid waste), accounting to 46% of the total nonrecurrent waste going to disposal. Table 11 lists the top waste codes, representing 89% of the total material going to disposal. All other waste streams were 2% or less.

Table 11: Top 6 Waste Codes to Landfill, 1998 Manifest

CWC	California Waste Code Description	Tons	Per Cent
181	Other inorganic solid waste	110,500	46%
352	Other organic solids	49,490	21%
613	Auto shredder waste	39,330	16%
491	Unspecified sludge waste	5,590	2%
223	Unspecified oil-containing waste	5,190	2%
591	Baghouse waste	3,960	2%
	Total for Top 6	214,060	89%
	Total	241,110	100%

Table 12 presents a listing of the largest quantity generators sending material to land disposal. The top twelve includes three refineries and four power plants. The single largest generator, Orange County Steel Salvage, is an auto reclaimer generating auto-shredder waste.

Table 12: Top 11 Facilities to Landfill, 1998 Manifest

Facility Name	County	Tons	%
Orange County Steel Salvage	Orange	38,550	16.0%
Tosco Refining Company	Contra Costa	15,860	6.3%
Elmore Power Plant	Imperial	11,940	5.0%
Del Ranch Power Plant	Imperial	7,820	3.2%
Vulcan Power Plant	Imperial	7,790	3.2%
Shell Martinez Refining Company	Contra Costa	7,510	3.1%
Leathers Power Plant	Imperial	7,170	3.0%
Golden Gate Bridge	San Francisco	5,620	2.3%
City of Santa Barbara Annex YD	Santa Barbara	4,350	1.8%
Aerojet General Corporation	Sacramento	3,630	1.5%
Total for Top 11		109,530	45%
Grand Total		241,115	100.00%

Hazardous waste management: incineration

Environmental and public health advocates are particularly concerned about hazardous waste incineration, largely because of the byproducts that can be released during combustion processes. If not properly controlled, these byproducts can include dioxins and other highly toxic materials.

Tables 13, 14 and 15 below shows the industries, waste types, and facilities involved in hazardous waste incineration. Again, one sees the continuing appearance of the petroleum industry, high on each list (especially if you disregard waste management companies such as Asbury Environmental Services, Evergreen Environmental Services, and Alviso Independent Oil). Casmalia Resources wastes may be associated with ongoing hazardous waste remediation efforts.

Table 13: 1998 Manifest Data; Top 11 Industry Types to Incineration

SIC	SIC Description	Tons	%
	Blank	2,069	23.6%
3721	Aircraft	1,069	12.2%
2911	Petroleum refining	1,002	11.4%
3764	Space propulsion units and parts	631	7.2%
4200	Trucking and warehousing	513	5.9%
9711	National security	504	5.8%
4932	Gas and other services combined	313	3.6%
3471	Plating and polishing	286	3.3%
3573	Electronic computing equipment	203	2.3%
3761	Guided missiles and space vehicles	201	2.3%
4900	Electric, gas, and sanitary services	175	2.0%
	Total for Top 11	6,966	79%
	Total	8,765	100.0%

Table 14: Top 14 CWCs to Incineration--1998 Manifest

CWC	California Waste Code Description	Tons	Percent
352	Other organic solids	2,346	26.8%
351	Organic solids with halogens	1,055	12.0%
221	Waste oil and mixed oil	884	10.1%
133	Aqueous solution with total organic residues 10 percent or more	532	6.1%
181	Other inorganic solid waste	417	4.8%
222	Oil/water separation sludge	339	3.9%
731	Liquids with polychlorinated biphenyls \geq 50 Mg./L	315	3.6%
214	Unspecified solvent mixture	290	3.3%
331	Off-specification, aged or surplus organics	258	2.9%
741	Liquids with halogenated organic compounds \geq 1,000 Mg./L	233	2.7%
541	Photochemicals/photoprocessing waste	232	2.7%
343	Unspecified organic liquid mixture	231	2.6%
134	Aqueous solution with total organic residues less than 10 percent	189	2.2%
551	Laboratory waste chemicals	182	2.1%
	Total for Top 14	7,503	86%
	Total	8,764.69	100.0%

Table 15: Top 12 Facilities to Incineration; 1998 Manifest

Facility Name	County	Tons	%
Aerojet General Corporation	Sacramento	618	7.1%
Asbury Environmental Services	Los Angeles	503	5.7%
Northrop Grumman Corp (EC)	Los Angeles	343	3.9%
Tosco Refining Company	Contra Costa	330	3.8%
Calpine-Pittsburg Plant	Contra Costa	310	3.5%
McClellan Air Force Base	Sacramento	257	2.9%
Northrop Grumman Corp (WC)	Los Angeles	253	2.9%
Sigma Medical Imaging Inc.	Fresno	213	2.4%
Castle Air Force Base	Merced	205	2.3%
Lockheed Martin Missiles & Space	Santa Clara	197	2.3%
Tosco Refining Company	Contra Costa	180	2.1%
IBM Corporation	Santa Clara	174	2.0%
Total for Top 12		3,583	40.9%
Grand Total		8,765	100.00%

Which facilities generate the most waste overall?

Table 16 shows the 20 largest quantity hazardous waste generators as identified in the manifest data system. Note that several of the companies are also “offsite”. “Offsite” facilities are those facilities that accept waste generated elsewhere for treatment and disposal. Generally, we exclude such facilities from analyses such as these to avoid double counting. For this table,

however, we have excluded wastes manifested under these facilities' EPA identification number for permitted activities. The quantities listed here were manifested under a different EPA ID number and may reflect activities associated with milkrun transporter activities.

Table 16: 1998 Manifest Data, 19 Largest Quantity Generators

Facility Name	County	Tons	%
Asbury Environmental Services	Los Angeles	98,029	8%
Evergreen Environmental Services	Alameda	82,416	7%
Orange County Steel Salvage	Orange	65,260	5%
US Marine Corps Logistics Base	San Bernardino	28,762	2%
Tosco Refining Company	Contra Costa	18,082	2%
Alviso Independent Oil	Santa Clara	13,401	1%
Elmore Power Plant	Imperial	12,080	1%
Aerojet General Corporation	Sacramento	11,512	1%
Advanced Environmental Inc.	San Bernardino	10,525	1%
Shell Martinez Refining Company	Contra Costa	8,853	1%
Del Ranch Power Plant	Imperial	8,036	1%
Vulcan Power Plant	Imperial	7,911	1%
Hadco Santa Clara Inc.	Santa Clara	7,759	1%
Casmalia Resources	Santa Barbara	7,516	1%
Leathers Power Plant	Imperial	7,367	1%
Leach Oil Co. Inc.	Los Angeles	7,297	1%
US Marine Corps--Camp Pendleton	San Diego	7,144	1%
Black Gold Industries	Ventura	7,113	1%
Myers Container Corp	Alameda	6,480	1%
Total for Top 19		415,542	35%
Grand Total		1,191,139	100%

Specific chemicals of concern

DTSC's Pollution Prevention Advisory Committee expressed concern about several specific chemicals. In general, this concern is associated with one or more of several aspects of the chemicals, including the toxicity, carcinogenicity, presence and prevalence in the environment (indicating a lack of appropriate management), and a record of causing illnesses in workers. The chemicals identified by the committee as being of particular concern included cyanide, mercury, and dioxin. Categories of chemicals included pesticides, especially diazinon; solvents, especially tetrachloroethylene, methylene chloride and 1,1,1-trichloroethane; and metals, such as copper, lead, zinc, selenium and chromium (mostly due to their presence in surface waters).

Because it is generally not possible to identify specific chemical constituents in the manifest and Biennial Generator Report data sets, we have restricted our analyses of these chemicals to the TRI data. Of course, the TRI data limitations apply, the most significant of which may be the large reporting thresholds. In some cases, for example, cyanide, many users of the chemical are

small companies that do not use cyanide in quantities large enough to be captured by this data set. Dioxins and mercury have not historically been captured at all in the TRI data and are only now being added as a reporting requirement. Notwithstanding these limitations, below is a short discussion of the chemicals that were identifiable in the TRI system. The discussions that follow focus on TRI “total releases,” unless otherwise specified.

Cyanide

1998 TRI data show that 124,808 pounds of cyanide were released to all environmental media in California in 1998. The industry type emitting the largest quantities of cyanide compounds is the mining industry, with a total of 109,000 pounds in 1998. In the plating industry, four facilities emitted 1,200 pounds. It is important to remember that while cyanide is used by some plating facilities, most are not subject to TRI reporting due to their small size. It is likely (and the manifest data support this) that there are many more facilities using cyanide than is apparent from the TRI data. An overview of manifest data showed 300 to 400 facilities manifesting cyanide wastes in 1998; many of these were in the metal plating/finishing industry.

Tables 27 and 28 in Appendix 7 show 1998 cyanide releases by industry type, and by facility. The gold ore industry (SIC 1041) was the largest releaser of cyanide, with 81% of the total releases. The next largest industry type was fabricated rubber products (SIC 3069), with 11%, followed by plating and polishing (SIC 3471), with a total of 1%.

Accordingly, mines were the biggest releasers of cyanide, with the McLaughlin Mine at the top of the list with 81% of the total releases. Royal Floormats was the second largest, at 11%.

Lead

TRI collects information about lead in two categories: lead, and lead compounds. The industry type releasing the largest amount of lead is the secondary nonferrous metals industry, which released 3 million lbs in 1998. Tables 29 and 30 in Appendix 7 show 1998 releases of lead, again by industry type and by facility.

The secondary nonferrous metals industry (SIC 3341) released the greatest quantities of lead in 1998, at 44%. It was followed by refuse systems (SIC 4953), at 34% and by metal ores (SIC 1099) at 20%.

Quemetco, Inc. in Los Angeles County was the largest releaser of lead in California, at 42% of the total emissions. Chemical Waste Management’s Kings County facility released 29% of the total, with Molycorp, Inc. releasing the third largest quantity, at 20%.

For toxic metals, it is generally a good idea to look at the “offsite recycle” TRI category to see the full picture, because many companies recycle these valuable materials. For lead, note the large quantity of waste recycled offsite in the storage batteries industry (SIC 3691): 21 million pounds in 1998.

Lead Compounds

The largest industry type releasing lead compounds in 1998 was the nonferrous foundries sector, 53% of the total. It was followed by the gold ores industry (SIC 1041), with 27% of the total. Tables 31 and 32 in Appendix 7 show the data.

The facility releasing the largest quantity of lead compounds was the P. Kay Metal Supply, Inc. facility in Los Angeles, with 53% of the total releases. The McLaughlin Mine was second, with 27%; followed by Safety-Kleen (Westmoreland), Inc. with 14%.

1,1,1-Trichloroethane

1,1,1-Trichloroethane is an industrial solvent. The total amount released was 205,000 lbs, with 116,000 of that released to air and 89,000 pounds sent to offsite disposal. 2.5 million pounds were recycled offsite. Tables 33 and 34 in Appendix 7 show the data. Refuse systems (SIC 4953) contributed the greatest quantity of releases, at 44% of the total, with 3,300 pounds released to air, and 88,000 to offsite disposal. Another 2 million pounds were reported to offsite recycle. The plating and polishing industry contributed 14% of the total. "Manufacturing industries not elsewhere classified" was third, with 12%.

The Onyx Environmental Services facility in Los Angeles County contributed the greatest quantity of total releases, at 24% of the total, followed by Rho-Chem Corp at 21%. Both of these are in the waste management businesses; these numbers probably reflect milkrun activities. Orcon Corp. was third at 12%, followed by J.P. Turgeon & Sons, Inc. at 9%. The Onyx facility also sent 1.8 million lbs to offsite recycle.

Tetrachloroethylene

Tetrachloroethylene, also known as perchlorethylene, is a commonly-used industrial solvent. In addition, "perc" is the solvent used widely in the dry-cleaning industry. The dry-cleaning industry does not appear in the TRI data, however, due to the generally small size of the facilities. Most if not all do not use perc in quantities that would subject them to TRI reporting. Data maintained by the California Air Resources Board (the Toxic Hot Spots Program) would give a good representation of perc releases by dry cleaners.

See tables 35 and 36 in Appendix 7 for a complete picture of the data. The aircraft industry was the largest contributor to total emissions, at 20%; followed by bolts, nuts, rivets, and washers at 14%. The next largest industry type was plating and polishing, at 13%. A total of 1 million pounds were released with 850,000 released to air, 19,000 pounds to land, and 153,000 to offsite disposal. Two million pounds were recycled offsite.

The top two contributors to total tetrachloroethylene releases were the Aerochem, Inc. Orange Facility and Kaynar Technologies, at 10% each. They were followed by the Aerochem, Inc. San Bernardino facility at 8%, Northrop Grumman Corp EC at 7%, and Lefiell Mfg. Co at 6%.

Methylene Chloride

Methylene chloride is another commonly-used industrial solvent. Tables 37 and 38 in Appendix 7 show the data. Total releases for this chemical were 1.1 million pounds, with 945,000 pounds released to the air, and 144,000 to land. Releases to water were 3 pounds; to POTWs, 523 pounds. An additional 3.3 million pounds were recycled offsite.

The plastics foam products industry (SIC 3086) was by far the largest contributor to total releases, at 67%. All of these releases appear to be from one facility, the Carpenter Co. of San Joaquin County, which also released 67% of the total.

Copper

Copper is another material that is reported two ways in the TRI system: copper, and copper compounds. Tables 39 and 40 in Appendix 7 show the copper data. The cathode ray television picture tubes industry and the air, water & solid waste management industries both generate 26% of the total, with refuse systems third at 18%. This is another chemical where significant quantities are recycled offsite. The total amount released was approximately 800,000 pounds. 533,000 pounds were disposed offsite, and 13 million pounds recycled offsite.

The Tyco Printed Circuit Group, Inc. Los Angeles facility and the U.S. Filter Recovery Services Los Angeles facility were the two largest contributors of copper, at 26% of the total each. Note that U.S. Filter Recover Services is an “offsite” facility; that is, it accepts wastes from businesses that actually generate the waste, for recycling and/or treatment.

Copper Compounds

The total quantity of copper compounds released in 1998 was 887,000 pounds, with 7,800 pounds released to air, 430,000 to land, 643 to water, 7,700 and 440,000 to offsite disposal. 5 million pounds were recycled offsite.

Tables 41 and 42 in Appendix 7 show the data for this chemical. SIC 4953, refuse systems, was the largest contributor to total releases, at 35%. Secondary nonferrous metals (SIC 3341) was the next largest contributor, at 23%, followed by “industrial organic chemicals not elsewhere classified” (SIC 2869), at 15%.

Chemical Waste Management, Inc.’s Kings County facility was the largest contributor to the total, at 35%; followed by Quemetco, Inc. at 23% and Procter & Gamble Mfg. Co. in Sacramento County, at 15%. Note that Chemical Waste Management and Quemetco are also offsite facilities.

Discussion and Conclusions

A review of this chapter shows that the petroleum refining industry consistently appears as a major contributor to hazardous waste generation in California. A quick summary: the petroleum industry

- contributes 30% of total TRI releases in California;
- contributes almost 10% of TRI offsite disposal quantities;
- generates 65% of wastes reported to the BGR data set; and

- generates 11% of the wastes to incineration (behind “blank” and aircraft).

Clearly, the petroleum refining industry contributes a significant portion of the total hazardous waste generated in the state. Remember, however, that environmental problems are not associated only with hazardous waste generation. In fact, the wastes reported to the manifest and BGR data sets are those that are properly managed and controlled; presumably, these quantities represent materials that do not cause harm, or cause less harm, because they are not released uncontrolled into the environment.

The picture of waste generation described in this chapter does not account for a variety of other important considerations. Air emissions are known to be significant from petroleum refineries;¹⁵ however, an extensive look at refinery air emissions is outside the scope of this report. Water quality is important as well. BGR and manifest data will not tell you what chemicals are found loose in the environment.

Manifest and BGR data also do not account for varying toxicity of wastes. The risks posed by the generation of hazardous wastes cannot be evaluated conceptually. To assess risk, one must know specifically what individuals are being, or may be, exposed to specific concentrations of a chemical, and through what routes of exposure. TRI data can give an indication of potential risk. Manifest and Biennial Generator Report data are of little use for this purpose.

¹⁵ DTSC’s 1998 data show Toxics Release Inventory total releases for SIC 2911 (petroleum refineries) at 16,763,577 total pounds released; 6,699,707 lbs were released to air. The next largest release of TRI chemicals was SIC 3411, Metal Cans, at 2,148,328 lbs. total releases, and 1,905,459 lbs. to air.

Chapter 4: DTSC Two-Year Pollution Prevention Workplan

Overview

This chapter presents the workplan for DTSC's Pollution Prevention Program for fiscal years 2000/2002. The mission and objectives for the program are presented immediately below. This is followed by a summary of the major focus areas and activities that will be pursued this year. The third section is a general overview of the program and the available staff and contract resources. The fourth and final section is a detailed discussion of the various focus areas, including a description of activities, tasks, outputs, and resources.

Mission

The mission of DTSC's Pollution Prevention Program is to promote pollution prevention by providing state leadership, guidance, and assistance to industry, local government and other environmental agencies.

DTSC does not characterize its mission solely as "preventing pollution." If DTSC were to use this as the mission, the measure of the program's success would logically be "tons of waste reduced," leading in turn to a program focused almost exclusively on large businesses producing large quantities of waste. While such a focus would indeed reduce the total amount of hazardous waste generated in California, it would not address the risks posed to workers and others from the activities of the numerous smaller quantity generators in California, which may in fact pose greater risks, both in the aggregate and at the company and neighborhood levels, than the larger quantity generators. DTSC believes that evaluations of pollution prevention success must include more than looking just at reductions in the total amount of hazardous waste generated. Full implementation of pollution prevention represents a significant cultural change and philosophical shift in the historic way of doing business, both in the private sector and in government, and requires a broader and more long term approach.

Furthermore, the laws and regulations establishing the pollution prevention program within DTSC stop well short of granting authority to mandate or enforce prevention. Even the Hazardous Waste Source Reduction and Management Review Act of 1989 (commonly known as "SB 14"), which requires that large generators of hazardous waste plan to reduce hazardous waste generation, contains clear limitations on DTSC's enforcement authorities. DTSC does not have the authority to control the decisions made by businesses as to whether or not to implement specific pollution prevention strategies. The ultimate decision to implement pollution prevention is outside of DTSC's control, resides instead with individual generators, which each face a unique set of environmental, economic and technical constraints. Therefore, DTSC cannot be accountable for the outcome.

DTSC believes that through leadership, guidance, assistance, and the integration of pollution prevention into other aspects of the regulatory program, things that DTSC is responsible for and can measure, California will ultimately see significant reductions in the quantity and/or toxicity of hazardous waste generated.

Objectives

The objectives of DTSC's pollution prevention program are as follows:

- To establish effective networks for communicating, promoting and distributing pollution prevention information;
- To promote and provide support to local pollution prevention programs;
- To achieve measurable reductions in the generation of hazardous waste and/or the hazardous properties of waste produced in California through source reduction;
- To ensure that inspectors and permit staff at both the state and local levels promote pollution prevention during routine regulatory activities;
- To expand current hazardous waste pollution prevention efforts to include other environmental regulatory agencies, so as to achieve better overall environmental results and minimize the unwanted shift of pollutants between environmental media; and
- To develop both detailed technical and broad-based materials (fact sheets, checklists, brochures, videos, technical reports, etc.) that support pollution prevention efforts.

Table 17: POLLUTION PREVENTION PROGRAM SUMMARY

I. SB 14 Implementation 1. Outreach and education 2. Review of SB 14 source reduction plans and hazardous waste management performance reports 3. Assistance to CUPAs
II. Local Government Support 1. Support local pollution prevention committees 2. Pollution Prevention Week 3. Annual pollution prevention conference 4. Bay Area Green Business program support
III. Integrating Pollution Prevention into DTSC's Regulatory Programs 1. DTSC regional office pollution prevention support 2. Permitting program support 3. Inspection/enforcement program support
IV. Technical Studies and Information Transfer 1. Solvent alternatives 2. Mercury/hospitals 3. Janitorial products 4. Cyanides 5. Internet access 6. Retired engineers program 7. On-site technical assistance 8. Document development 9. Presentations
V. SB 1916 Advisory Committee 1. Staff support to advisory committee

VI. Other Activities

1. Coordination with EPA Region IX
2. Western Regional Pollution Prevention Network
3. Merit Partnership
4. Access to capital project
5. Mexico border
6. Cal/EPA ISO 14000 Pilot Project
7. National programs
8. Technology Certification
9. Legislation and regulations review
10. Grant applications
11. Federal facilities

Program Resources

DTSC's Pollution Prevention Program is situated within the Science, Pollution Prevention and Technology Program (SPPT), within the Office of Pollution Prevention and Technology Development. In addition to the OPPTD pollution prevention staff, there are two dedicated pollution prevention staff with the Hazardous Waste Management Program (HWMP), and one position in Office of External Affairs (OEA). The total number of pollution prevention positions within DTSC is 23, including first and second line supervisors. DTSC is in the process of adding four additional positions funded from SB 1916. Proposals for two additional positions for conducting life cycle analyses and two positions for pollution prevention activities along the California/Mexico border are currently proposed in the Governor's budget.

The number of budgeted positions does not, however, reflect the totality of DTSC's commitment to pollution prevention. Other DTSC staff within the Office of External Affairs, Hazardous Waste Management, the Hazardous Materials Laboratory, the Office of Legal Services, OPPTD's Technology Development Branch, the Human and Ecological Risk Division and administrative services also contribute to pollution prevention-related projects. Support and participation of these staff are critical to the overall success of DTSC's pollution prevention program.

The mission, responsibilities and duties of the budgeted pollution prevention positions are the focus of this workplan. The remainder of this chapter will focus on the specific activities planned for the next two fiscal years (July 2000 through June 2002), beginning with the two industry-focused projects mandated by SB 1916.

Development of Targeting Considerations

This section describes how the industry targets were selected for DTSC's 2-year pollution prevention workplan. To choose between eligible industries, the "considerations" listed below were developed by DTSC staff and the Advisory Committee. Because of DTSC's clear hazardous waste authority and expertise, only industry types that generate hazardous waste were considered as targets; therefore, the screening criterion was established to ensure that the chosen p2 targets have some connection to hazardous waste issues or authority.

The considerations represent the kinds of things DTSC and the committee thought important when choosing targets. However, an industry type did not have to meet all of the considerations to be chosen as the pollution prevention target. There was no scoring or weighting of these considerations; instead, a qualitative look at the industry compared to the considerations was made.

Screening Criterion

1. Connection to hazardous waste

DTSC is a hazardous waste regulatory agency. Authority to address other media environmental issues is limited to the extent that there is some connection to hazardous waste issues/authority.

Considerations

2. Waste quantities

We should consider the types and quantities of hazardous waste generated, as reflected by manifest, Toxics Release Inventory, and Biennial Generator Report data.

3. Coincidence with regulatory, other agency efforts; opportunity for cross-media work within Cal/EPA

DTSC's success in helping businesses reduce waste and pollutants will be enhanced if it "piggy-backs" onto other assistance and regulatory efforts. This includes "pollutants of concern," pollutants and chemicals of greatest concern to regulatory and other agencies in California.

4. Environmental problem

Is there an environmental problem associated with waste generation and releases of pollutants from this industry type?

5. Potential for harm from substances released/generated from an industry type

Includes but is not limited to consideration of:

- carcinogenicity
- reproductive effects
- effects on wildlife
- effects on water, air quality
- toxicity
- likelihood of exposure

6. Technical feasibility

The identification of pollution prevention program targets must include a consideration of the technical feasibility of reductions in specific circumstances.

7. Existence of known p2 solutions

Project success will be a function of whether or not there are indeed pollution prevention solutions for the wastes/pollutants generated within an industry category.

8. *Economic feasibility*

Program targets must include consideration of economic feasibility, both for the facilities expected to reduce pollution, and the agency activities that are designed to promote reductions.

9. *Industry interest, willingness to participate*

DTSC's pollution prevention efforts cannot be effective if selected target industries are not interested in participating.

10. *Labor interest, willingness to participate*

The unionization of an industry may increase the chances of success for a p2 project. Working with and through employee unions may provide opportunities for DTSC to address pollution and worker health and safety concerns simultaneously.

11. *Environmental Justice*

Are low-income or minority populations disproportionately affected by releases from this industry type?

12. *DTSC technical expertise (building on what we know)*

DTSC can be most effective if it maximizes the use of staff expertise.

13. *Opportunity to educate general public about pollution prevention*

Does working with this industry to reduce waste and pollution provide opportunities for educating and involving the general public?

14. *Advances the Precautionary Principle*

Are there opportunities to develop and utilize the Precautionary Principle by working with this industry?

Grouping the Considerations

It has been suggested that understanding these targeting considerations may be easier when grouped as follows:

Importance of Target (problem attributes)

- 2. Waste quantities
- 4. Environmental problem
- 5. Potential for harm from substances released/generated from an industry type
- 11. Environmental justice

Feasibility Concerns (effort attributes)

- 3. Coincidence with regulatory, other agency efforts
- 6. Technical feasibility
- 7. Existence of known p2 solutions
- 8. Economic feasibility
- 9. Industry interest, willingness to participate

10. Labor interest, willingness to participate
12. DTSC technical expertise (building on what we know)

Outcome Spinoffs (end product attributes)

12. Opportunity to improve Cal/EPA cross-media efforts
13. Opportunity to educate general public about pollution prevention
14. Advances the Precautionary Principle

Concurrent with the development of these considerations, a list of potential industry targets was developed. The list included:

- printing operations
- wood finishing
- metal finishing
- chemical manufacturers
- semiconductor manufacturers/electronics
- auto repair
- agribusiness
- petroleum refining
- Department of Defense facilities
- primary metals
- airports
- utilities
- mercury

Application of the considerations to the selected industries

Appendix 6 on page 148 shows the application of the considerations to the selected industry types.

Workplan for Vehicle Service and Repair Industry

Purpose

As described in the introduction, SB 1916 requires DTSC to select a small business industry for special pollution prevention program focus. With the assistance of the Advisory Committee, the vehicle service and repair industry was selected. The purpose of this section is to describe the activities of a two-year work plan that will focus special attention on implementing p2 in this industry.

Background

There are over 31,000 vehicle service and repair businesses in California, including general automotive repair and maintenance, smog testing, radiator, brake, and transmission services. Nearly half (47%) of these businesses are located in the Los Angeles basin counties (Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties.) About 20% are located in the San Francisco Bay area counties (Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano and Sonoma counties.) This number does not include vehicle body painting and repair operations, or vehicle washing operations. Additionally, there are numerous

state, county and city agency fleet and equipment maintenance operations. Typical hazardous wastes generated by the vehicle service and repair industry are used oil, waste antifreeze, lead acid batteries, waste solvents, clarifier liquid and sludge, and contaminated absorbent and shop rags.

Local governments with regulatory responsibility for the vehicle repair industry have indicated the need to improve compliance and implement p2 practices for this industry. Although there are some local p2 programs working with this industry group, there is a lack of statewide coordination of efforts in this industry. To reach a significant portion of an industry of this size, DTSC will need to work with other organizations, such as U.S. EPA, local governments, other state agencies, auto repair industry associations, fleet operators, parts distributors, and product and equipment vendors.

Many shops and fleet operations are implementing p2 and best management practices (BMPs), unfortunately these practices are not accepted as the industry-wide standard. Studies have shown that compliance and the implementation of p2 practices can reduce adverse environmental impacts within this industry. An example of one compliance issue driving p2 is the South Coast Air Quality Management District rule 1171. This law, effective January 1, 1999 restricted the use of solvent-based parts cleaners, such that repair shops must use aqueous-based parts cleaning systems.

Project Goal

The goal of DTSC's vehicle service and repair industry pollution prevention project is to reduce environmental and human health impacts of vehicle repair and maintenance operations within California by changing the behaviors and practices of the industry and consumers to those that promote:

- , increased compliance with existing environmental laws and regulations;
- , a commitment to protect public health and the environment ; and
- , creation of a working partnership between the consumer, auto repair shops, and local governments to implement p2 options and achieve a cleaner environment.

The primary focus for this project is small to medium sized, general vehicle service and repair facilities. The project is divided into two phases: Project development and implementation. The development stage will focus on laying groundwork and identifying specific strategies to be applied during the implementation phase.

In the project development phase, the tasks identified are

- 1) needs assessment,
- 2) staff skills development,
- 3) partnership development,
- 4) specific activity selection
- 5) resource development.

In the implementation phase of the project, the tasks are

- 6) training and outreach to local governments and industry,

- 7) consumers/motorists education,
- 8) awards and incentive programs, and
- 9) measurement and evaluation.

Phase 1 Project Development

Coordination, rather than duplication, of efforts with other governmental agencies and industry groups (stakeholders) is preferred. However, more information about existing industry conditions is needed from the stakeholders before specific strategies may be decided upon. Therefore, DTSC will begin the project by soliciting feedback from stakeholders. The needs assessment section of the work plan outlines a strategy for obtaining feedback from stakeholder groups and the development of specific activities that will be implemented over the next 2 years. Many of the listed tasks will be occurring concurrently.

1. Needs Assessment Time line: July - September 2000

The purpose of this phase of the project is to determine existing conditions and needs in the general automotive repair industry, including the training needs of employees and operators, and the types of assistance needed to implement p2 and BMPs. DTSC will also seek feedback from local community groups and environmental groups on their concerns with vehicle repair/fleet maintenance facilities in their neighborhoods and to assist in promoting motorist/consumer education. Finally, the assessment phase will also investigate the resources and opportunities that are available in other state and local agencies (including community colleges) to support improved compliance and p2 in the vehicle repair industry. In order to accomplish this and develop the specific strategies that will be implemented, DTSC staff will contact various stakeholder groups.

Vehicle repair and fleet maintenance industry groups

DTSC will contact representatives of Automotive Service Council of California (ASCCA), Automotive Service Excellence (ASE), Society of Automotive Engineers (SAE/STS), Automotive Service Association (ASA), the National Association of Fleet Administrators (NAFA), and Public Fleet Supervisors Association (PFSA) to determine their needs for compliance assistance, technician training, the potential for p2 to result in cost savings and efficiency improvements to shops, and to identify barriers to implementing p2. These contacts will also be used to help identify BMPs for various kinds of repair facilities.

Local Governments

Local government agencies will be asked to identify the main compliance problems within this industry, perceived barriers to implementing p2, potential p2 opportunities and type of assistance methods needed to implement them. DTSC will also seek to identify the general types of assistance that may be provided that would best assist local governments in working with this industry. DTSC will seek advice from the local programs on how to reach and involve facilities with poor and mediocre compliance histories as well as facilities with good compliance histories.

Labor/Employees

DTSC staff will contact labor groups to identify regions where labor unions are active within this industry and determine training needs, health and safety concerns in general and potential p2 options. Staff will identify affiliations with technical school programs, such as community college automotive technology programs, as potential partners in developing future environmental training programs.

Environmental and Community Groups

DTSC will contact interested local community groups to determine their concerns with vehicle repair shops in their neighborhoods, such as determining perceived exposure risks from pollutants and wastes generated. DTSC will attempt to determine their knowledge of proper vehicle maintenance, waste disposal for “do-it-yourselfers” and suggestions for motorist/consumer education.

Other State Agencies

Other boards and departments within the State have regulatory concerns and issues with the automotive repair industry. DTSC staff will survey the Air Resources Board and local air districts, the State and Regional Water Boards and the Integrated Waste Management Board to identify their issues and opportunities to combine our hazardous waste compliance and p2 messages with their media specific messages and outreach efforts.

Upon completion of the Needs Assessment step DTSC will produce a menu of needs, targets, and potential opportunities. This menu will serve as a basis for identifying and initiating discussions with potential partners (see Step 3 below).

2. Staff skills development Time line: July-November 2000

In order to conduct training and provide assistance on automotive repair and maintenance p2 and BMPs, DTSC staff will need to develop proficiency within the industry. Concurrently with the other elements of project development, staff will visit auto repair shops and fleet maintenance operations to learn the processes and waste management operations, and gain practical knowledge. Staff will be expected to become proficient within the time period of July through November 2000. Additionally, staff will search, collect, and develop an inventory of BMPs and reference materials suitable for use in industry outreach and education efforts.

3. Partnership Development Time line: July 2000-July 2001

DTSC will explore partnerships to promote p2 methods, BMPs, improved compliance, and environmentally preferable purchasing. The SB 1916 resources available to reach 31,000 repair shops and several hundred local agencies are limited and inadequate to support a comprehensive statewide outreach and education program for this industry. To maximize our effectiveness, DTSC will seek to establish partnerships with public and private entities, to create an array of case studies, resources and examples that can be applied to the problems and issues within this industry. DTSC will work with the partners to identify and prioritize the types of training and outreach that will best meet the needs of industry and local government. DTSC will develop partnership with U.S. EPA Region IX to deliver training to local governments and businesses. DTSC will explore partnerships with industry groups, local and national environmental groups and Green Business Programs to market “best practices for motorists” to the public. In addition, the following potential projects may be developed with partners:

Automotive Repair Industry

Industrial partners come in many different shapes and sizes, from small privately owned repair shops, to very large corporations. Included under the category of “industry”, are parts and tool suppliers who could join us in outreach to shops and the public, fleet maintenance operations which because of their size and control over maintenance decisions may be able to demonstrate technologies that would be difficult to “sell” in private shops, automotive dealers and even the hazardous waste transportation industry that could also assist in information distribution. Industry associations could also play an important role in the outreach efforts. DTSC will explore working with the US EPA sponsored national auto repair environmental information center to see if more California specific requirements could be added, along with additional p2 information.

Labor/Employees

Identify labor union partners to explore the possibility of placing p2 training into auto technician training programs, and also to address health and safety concerns. Mailings associated with technician registration/renewals may provide a conduit for information distribution

Community Colleges

DTSC will explore partnerships with the community colleges to develop Hazardous Materials Handling and p2 Certifications for automotive technician training programs. DTSC may also work with the existing hazardous waste “compliance school” programs to assure that automotive repair p2 information is included or at least referenced.

Local Governments

Local programs are one of the most important groups for DTSC to work with. Through existing programs local governments can deliver multi-media p2 training to the industry’s small businesses and promote p2 implementation. DTSC staff will work with CUPAs and non-regulatory local programs. This could include the existing Bay Area Green Business program. DTSC could also seek to develop criteria and standards for establishing new programs in other regions, and identify and assist local governments interested in starting Green Business programs. Automotive repair “Green Business” owners may act as resources for other businesses. These partnerships may also support DTSC’s measurement activities, by collecting

baseline and progress data on improved compliance and the reduction of waste generation. This data would be used both in the evaluation of the effectiveness of the project and potentially to promote p2 implementation.

State agencies

Regulatory changes and initiatives within Cal/EPA boards and departments may have direct effects on the vehicle repair industry; e.g., product bans, permitting requirements, reporting etc.. Partnerships with the other Cal/EPA boards and departments may result in the development of joint p2 activities, multi-media p2 and compliance training and outreach. An example of this would be building hazardous compliance and/or p2 into the Integrated Waste Management Board's WRAP awards program. Boards and departments outside of Cal/EPA may also provide opportunities. For example, the Bureau of Automotive Repair may be of assistance in targeting shops or in distributing information. An additional potential activity that will be explored is the development of a "State Leadership Program" for state agency fleet management. This program may include evaluation of state agency fleets—environmental compliance, p2 and BMP implementation, and environmentally preferable procurement.

Environmental and Community Groups

DTSC will seek input from community groups and interested environmental groups to assist in developing meaningful waste stream and facility targets, as well as effective consumer and motorist education and marketing campaigns.

4. Specific Activity Selection Time line: September-November 2000

After collecting information from stakeholders and discussing potential opportunities with prospective partners, DTSC will develop a series of specific activities with measurable outputs. These may include targeting a specific number of facilities with poor compliance histories or providing training to a number of local government groups throughout the state. Local government programs that are willing and capable to address automotive repair facilities will clearly be included in this group, with DTSC providing assistance with training and technical materials. In selecting activities, DTSC will consider the potential for initial success, availability of measurable and reliable data, impact on industry per delivery (bang for the buck), potential for use as a model for other operators, and the use of existing tools (i.e., regulatory drivers like South Coast AQMD Rule 1171), willingness and availability of partners and the budget implications for DTSC.

5. Resource Development Time line: July-November 2000

DTSC will become the central clearinghouse for vehicle service and repair p2 information. Staff will make use of existing materials from SWRCB, IWMB, ARB, U.S. EPA, and other organizations. DTSC will utilize DTSC web page to include links to various p2 resources for auto repair. This may, and in the long term, include self-paced training modules for p2 vehicle repair/fleet facilities. Other resources that DTSC may develop would be made available both in print and on the web site. These could include a database of product and equipment vendors, a compliance calendar and checklist, spreadsheets for recording and tracking waste and cost data, a matrix demonstrating the compliance benefits and economic benefits of implementing p2

strategies, and a model p2 plan for the industry. Developing and maintaining information resources is expected to be continuous throughout the project. There will be a focused effort on developing materials early in the project to be available for distribution to local governments and industry.

Phase 2 Project Implementation

The second phase of the project will focus on implementation of the specific activities identified above. Included in implementation is a commitment to track and measure the results of the efforts.

6. Training and Outreach Time line: September 2000-July 2002

DTSC will promote the benefits of p2 methods and deliver training to local government agencies and vehicle repair and fleet maintenance operations. DTSC will work with local government and industry partners to facilitate training, distribute information, and provide onsite assistance. Trainees will be surveyed initially to determine existing practices. Follow-up surveys to track those operators that have begun implementing p2 methods will be conducted at periodic intervals. Additionally, after the first year of training delivery, medium-specific and/or issue-specific training may be developed with partners, depending on needs. DTSC will provide training on source reduction planning requirements for those facilities subject to SB 14, and may sponsor conferences and vendors fairs to promote information exchange.

7. Consumer Education Time line: September 2000-July 2002

The purpose of trying to reach consumers and motorists to promote the environmental and economic benefits of proper vehicle maintenance is to make use of their buying power as a way to foster change in the vehicle service and repair industry. DTSC will work with industry partners, such as parts distributors, to communicate the benefits of “best practices for motorists” to the public. With partners, DTSC will develop and promote material on the DTSC web pages and develop press releases to announce and market green business programs, industry p2 programs and awards programs.

8. Awards/Incentives Program Strategy Time line: July 2001-July 2002

DTSC will explore the development of an awards program for vehicle repair and fleet maintenance facilities, with the goal of providing recognition and motivation for p2 and environmentally preferable procurement efforts. The awards program may be developed in partnership with other recognition programs, such as the Integrated Waste Management Board’s Waste Reduction Awards Program (WRAP), or Green Business Program recognition. Tasks may include developing the program overview, applicant protocol, and specific p2 and procurement requirements for awards. Baseline and progress data collected during the application and review process may be used to measure project goals. Upon selection of facilities for recognition, press releases and p2 abstracts/case studies will be prepared and awards events organized and conducted.

Measures of Success

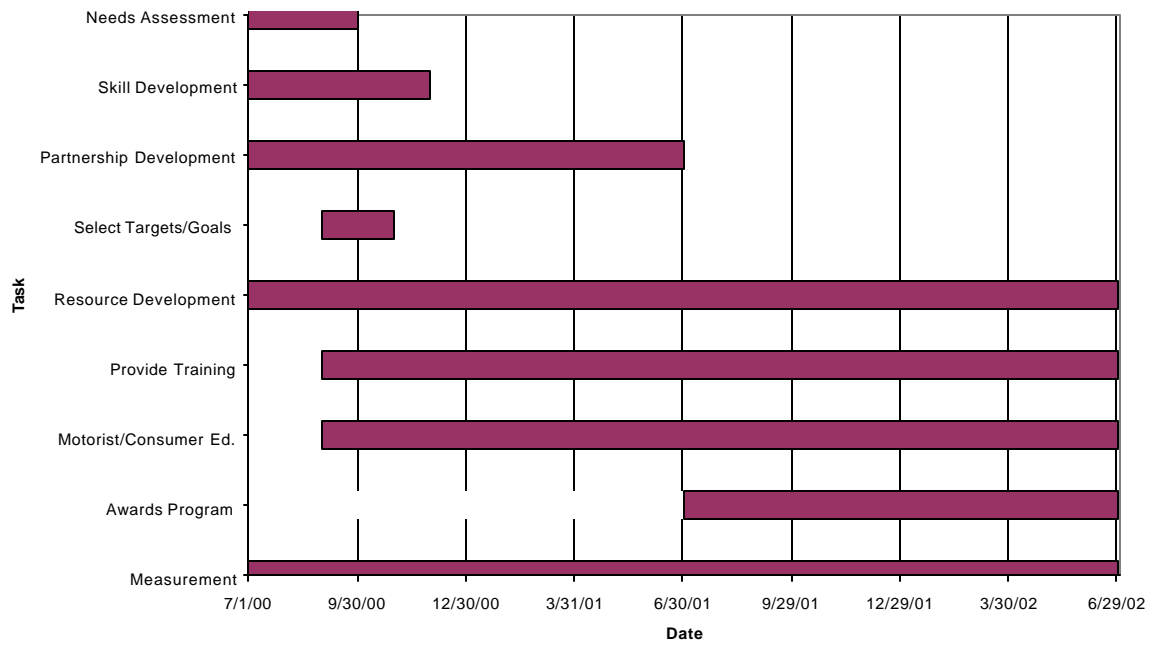
The project goal is to reduce the human health and the environmental impacts of vehicle and fleet repair and maintenance operations. If the program is successful, it will provoke behavior

changes that will contribute to decreases in pollutants released to air, water and land. However, direct measurement of pollutant reduction on a statewide basis may not be possible. Even local geographic assessments are difficult because sources other than vehicle repair and maintenance facilities may be contributing to pollutant release. In addition, any regional measurement of ambient change would be prohibitively expensive for this project. Therefore, DTSC will evaluate behavior changes and compliance improvements as indicators of environmental improvements that are not directly measurable. Through initial and follow up surveys, use of p2 methods, compliance improvements and cost efficiencies will be measured and tracked as indicators of program success and to demonstrate incentives. Strategies will include surveying the effectiveness of training presentations to determine if the concepts were understood. The training may then be revised as appropriate. After the training, participants will be surveyed to determine if the p2 training concepts are being applied. This strategy may enable staff to evaluate changes in product and waste management behaviors of the operators as a result of attending the training.

More specific measurement strategies and quantitative accounting will be developed as feedback is received on the implementation of specific projects and activities. Quantitative measures may vary for different activities and for different target waste streams. In working with different CUPAs it may be necessary to develop very different measures for similar projects based upon their existing data collection practices. Measurement strategies may include quantification of the waste reduced, purchase of products with recycled content, compliance improvements, and cost benefits for a sample group of businesses. Sampling techniques will be utilized to project effects across wider populations. This may include volunteers from green business programs, businesses and/or fleets required to implement SB 14 requirements, awards applicants, and other volunteer operators. Some data would be subject to onsite verification by DTSC and partners. The data would then be evaluated to determine the extent that specific project has been successful and the extent it has contributed to the overall program goals. Quantitative data collected on regulatory compliance, waste generation reduction, and improved cost efficiency may also be used to demonstrate and promote the economic and environmental benefits of p2 to this industry.

At the completion of the project, DTSC will conduct a survey of local government agencies on perceived compliance rates within the industry and evaluate the resulting trends.

Figure 9: Vehicle Service and Repair Industry Work Plan Time Line



Petroleum Refining Industry Project Workplan

General Project Goal

In order to achieve improvements in environmental protection, public health and worker health and safety, this project will seek to obtain an expanded long term commitment to source reduction from California's petroleum refining industry through a process involving community and other stakeholder groups.

Background

The petroleum refining industry is one of California's largest industries. In 1997, it processed nearly 100 million tons (635 million barrels¹⁶) of crude feed stocks, while producing more than 48 million tons (374 million barrels) of gasoline in addition to diesel and jet fuel, fuel oil, liquefied petroleum fuel gas, lubricants and a wide variety of petrochemical feedstocks. The petroleum refining industry is also California's largest hazardous waste generator. A review of seventeen of California's largest petroleum refineries reported generating 126,500 tons of non-aqueous hazardous waste in 1998¹⁷. Partly due to the volume of hazardous waste it generates, the petroleum refining industry has been a primary focus for DTSC's efforts to reduce waste through the use of pollution prevention practices. With the passage of California's Hazardous Waste Source Reduction and Management Review Act (SB 14) in 1989, California's larger hazardous waste generators were required to look for ways to avoid hazardous waste generation. As part of this effort, DTSC found that the industry reduced its non-aqueous waste generation by more than 30 percent from 1990-1994, and again by more than 30 percent from 1995-1997. While the industry has made significant pollution prevention progress, petroleum refinery workers and local communities continue to express concern over refinery impacts on their health and environment.

DTSC proposes a project that will focus on improving refinery practices, working conditions and the surrounding environment. Central to this objective is increasing the industry's long-term commitment to source reduction. This goal will be pursued through an open process, with voluntary participation of the petroleum refineries and all stakeholder groups.

DTSC anticipates obtaining refinery industry commitment to implement "model" source reduction practices at three to five individual refineries statewide. These commitments will result from efforts to identify and involve key stakeholders, including refineries, refinery communities, workers and government. These commitments will be in addition to any previous ones made as part of industry source reduction planning efforts under SB 14. This project will identify general information on target industry wastestreams and model source reduction measures. DTSC will also publicize information profiles on all of the state's larger refineries.

¹⁶California Energy Commission, "1997 California Refining Industry Report." Also assumes 42 U.S. gallons/barrel with crude and gasoline specific gravities of 0.90 and 0.74, respectively.

¹⁷ Reported to DTSC in Summary Progress Reports under the Hazardous Waste Source Reduction and Management Review Act for 1998.

This information, coupled with a project report and the continuing status tracking of ongoing local projects, will be updated on a web site available to all interested stakeholders during and after the project concludes.

This will be the first time that DTSC adopts a strategy based on establishing active and ongoing dialogue among refineries and key stakeholder groups that is intended to continue after the local pollution prevention projects are implemented. It is expected that this dialogue will result in future pollution prevention successes that will be based on considerations of stakeholder input. In addition, this information will be made directly available to local community and environmental groups for distribution to interested citizens.

Strategy

DTSC intends to pursue a strategy based on establishing, facilitating and developing an active dialogue with and among refineries and key stakeholder groups. This dialogue will provide a forum in which stakeholders can share concerns, participate in plan development and implementation and engage in a cooperative effort to address pollution prevention opportunities in the refinery industry.

The dialog will initially be focused very broadly, and will consist of information-gathering and sharing among the participants. This broad-based early effort will provide a strong foundation for understanding the challenges of the project and the needs of the participants. As the dialogue continues, the emphasis will shift toward analysis and consensus-building, in order to map out the common ground necessary for prioritizing and goal-setting. The dialogue will increasingly become more community-based. Finally, the effort will concentrate on obtaining agreement on commitments for pollution prevention implementation at specific facilities.

DTSC believes that partnering with key stakeholders from the following four sectors is critical to the success of the plan, and intends to pro-actively seek their participation in the project:

- community
- industry
- labor
- government

Community involvement is essential for the success of this project. DTSC intends to ensure that the project is open and accessible to the communities in which refineries are located. DTSC will actively solicit the participation of environmental and other public-interest groups, grass-roots organizations, activists, and the general public. DTSC believes that the credibility of the project will depend on its transparency and inclusiveness.

The project's success will also depend upon the expertise and cooperation of the refinery industry. There is no alternative source for the resources, expertise, and commitment that will be required to implement any pollution prevention activities. As the dialogue progresses to facility-specific activities, industry participation and voluntary partnership will be the most critical factor in determining the ultimate success of the project.

DTSC recognizes that the people who work at refineries are directly and immediately affected by pollution prevention implementation. They are personally involved in every aspect of refinery operations and possess first-hand knowledge of refinery processes and everyday refinery activities. Refinery workers can make a valuable contribution to successful pollution prevention process application, design and operation. DTSC will seek the unique perspectives of refinery workers by including opportunities for the participation of employees and their representatives in the project.

The refinery industry is subject to regulation by a wide variety of governmental agencies, at the local, state and federal level. Coordination and cooperation by these governmental entities is vital in order to avoid duplication of effort, or worse, contrary efforts, particularly with regard to the multi-media nature of effective pollution prevention implementation. DTSC will make every effort to include other governmental agencies whose programs have a meaningful nexus to the project in the ongoing planning and dialogue.

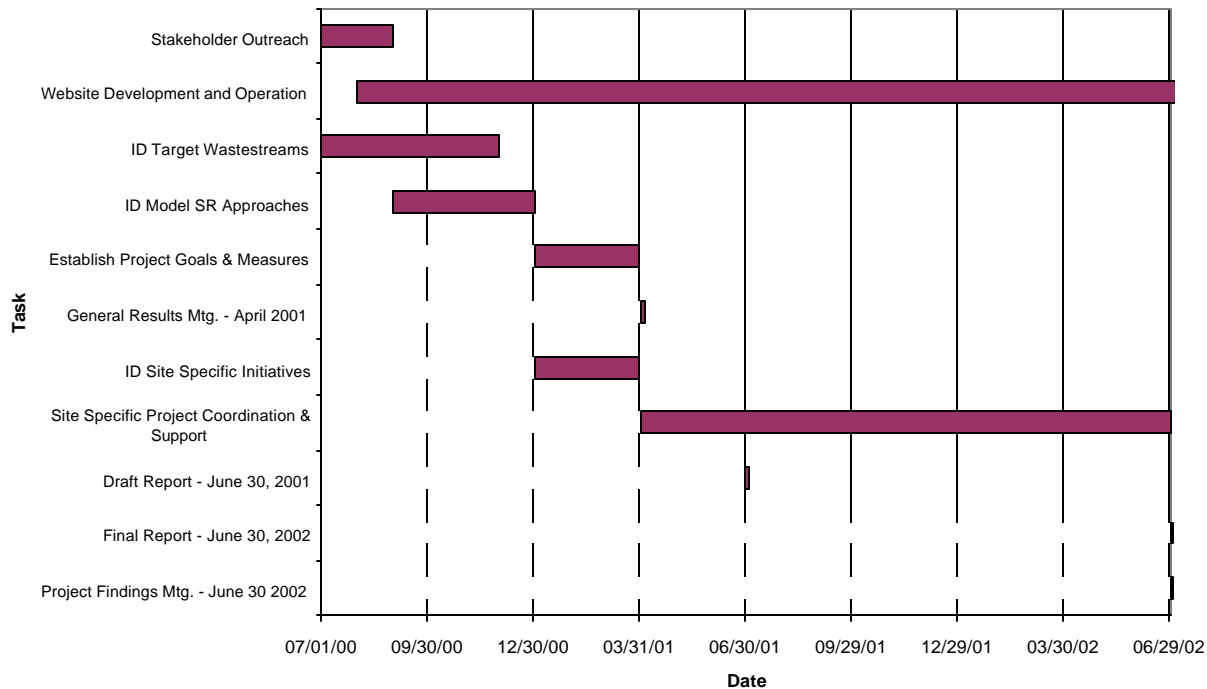
Workplan Summary

Stakeholder outreach	June – September 2000
Identify stakeholders	
Discuss project concept	
Solicit input	
Identify target waste streams	July – November 2000
Stakeholder concerns/priorities	
Waste generation quantities	
Compliance history	
-environmental	
-worker health and safety	
-planning and community right to know	
Environmental risk	
-multiple factors	
Model source reduction approaches for each target waste stream	September – December 31, 2000
Identify alternative approaches	
Evaluate feasibility with stakeholders:	
-Cost	
-Technical	
-Environmental, public health, worker health and safety, risk/benefit	
-Likelihood of success	
Select preferred model approaches	
Develop Performance Measures	January – March 2001
Independently verifiable numerical measures	

for each model source reduction approach

Project and Industry Goals	January – March 2001
Project workplan goals	
Industry projected source reduction goal	
General Results meeting	April 2001
-In petroleum refining areas of state	
Site-Specific Projects	January – March 2001
Voluntary participation	
Determine specific waste streams	
Commit to implement source reduction approaches	
Site-specific project goals	
Site-Specific Project Coordination	March 2001 – June 2002
Facilitate stakeholder interests	
Facilitate identification of local project details	
Track project status and direction	
Project Support (both general and local)	March 2001 – June 2002
Fact sheets	
Case studies	
Baseline facility profiles	
Project report	
Web site	
Concluding information and recognition meeting	June 2002

Figure 10: Timeline for Petroleum Refining Industry Source Reduction Activities



Petroleum Refining Activities Timeline Supplement

Task Descriptions

Stakeholder Outreach

DTSC staff will identify and meet with key stakeholders to provide background and project information, and to solicit comments and active participation. Letters will be sent to stakeholders announcing the project and staff will be available to discuss the project with stakeholders by phone or in-person, when possible. DTSC staff will convene public meetings of the SB 1916 Advisory Committee to allow for public review and comment on the draft workplan, which includes the refining industry project.

Website Development and Operation

DTSC will support stakeholder participation in the project by providing web access to comprehensive project-related informational resources. The website will incorporate project background information, industry assessments, key stakeholder contacts, links to other relevant websites, and extensive data on refinery industry performance. The website development efforts will be initiated early in the project, and will ultimately incorporate the targets, goals and results of the ongoing efforts. DTSC will continue to maintain the website to support stakeholder efforts beyond the life of the project.

Identify Target Wastestreams

DTSC staff will identify target wastestreams based on the outcome of their research and discussions with stakeholders. The selection of target wastestreams will be an open, inclusive, and collaborative process. This process will also result in detailed information profile of each refinery.

Identify Model Source Reduction Approaches

DTSC staff, in consultation with key stakeholders, will identify alternative source reduction approaches; further evaluation will result in the selection of model source reduction approaches for the target wastestreams.

Establish Project Goals and Measures

DTSC staff will develop goals and measures for all key elements of the project. Numeric measures of successful pollution prevention performance will be developed for the specific model source reduction approaches and for the refining industry in the aggregate.

General Results Meeting

DTSC will convene a public meeting in each of California's primary petroleum refining regions to review the progress of the project to date, present the target wastestreams, model source reduction approaches, goals and measures, and to solicit feedback. DTSC will also invite continued involvement in the effort and encourage participation in the upcoming site-specific portion of the project.

Identify Site-Specific Initiatives

DTSC will identify opportunities for the voluntary participation of refineries in site-specific initiatives to implement model source reduction approaches to target wastestreams. DTSC will work collaboratively with interested stakeholders in order to secure voluntary participation of a select few facilities in this portion of the project.

Site-Specific Initiative Coordination and Support

DTSC staff will actively work to facilitate and support the voluntary efforts of the selected facilities to implement model source reduction approaches, and to maintain an open and inclusive dialogue with all stakeholders throughout the initiative.

Report

DTSC will develop a comprehensive report of the large industry target project. The report will include the background and history of the project, the results and anticipated results, and will incorporate a complete assessment of the refining industry from a pollution prevention perspective.

Project Findings Meeting

DTSC will conduct a public meeting in each of California's primary petroleum refining regions to summarize the findings and accomplishments of the project, and to gain commitment to continuing the effort. The meetings will also provide an opportunity to distribute information and

encourage ongoing involvement by stakeholders in DTSC pollution prevention program efforts, and to emphasize the need for the continuation of the dialogue established during the project.

Other DTSC Pollution Prevention Activities

SB 14 Implementation

The Hazardous Waste Source Reduction and Management Review Act (SB 14) requires that larger quantity generators evaluate source reduction opportunities and report on accomplishments every four years. The most recent SB 14 documents—the Source Reduction Plan, the Hazardous Waste Management Performance Report and the Summary Progress Report—were due September 1, 1999.

The four-year planning horizon within SB 14 causes DTSC's work in this area to be cyclic in nature. During the first two years after the plans are due, p2 staff gathers data and assesses industries' source reduction efforts. During the year before plans are due, staff focus on outreach to alert the regulated community that plans are again due the following year. Every year, staff make presentations related to SB 14, answer generator questions and/or provide training.

A major task under SB 14 for FY 00/01 is the source reduction plan review process. This involves determining which industries to target for study, developing lists (with names, addresses and phone numbers) of generators within the target industry sectors, and formally requesting submittal of their plans and reports. The purpose of the review is twofold: to assure compliance and to identify viable source reduction alternatives that can be shared throughout the industry. The following industries will be considered when determining the industries to be reviewed during this two-year effort.

Table 18: Possible Industry Targets for SB 14 Plan Review

Industry Type	Basis for Possible Selection
Semiconductor	--high Advisory Committee interest in environmental effects from this industry --high use/release of toxic substances by this industry --existence of environmental problems (e.g., contaminated groundwater) due to industry activities --only the semiconductor subset previously reviewed by DTSC
Biotechnology	--important to California economy --not previously reviewed by DTSC --need to understand what wastes are generated
Forest Products, Paper and Allied Products	--known to cause water quality problems --not previously reviewed by DTSC --need to understand hazardous waste issues
Analytical Laboratories	--not previously reviewed by DTSC --although waste quantities low, may be generators of extremely hazardous waste --may pose risk in spite of low quantities due to nature of chemicals used
Primary Metals	--data analysis revealed large quantities of waste, particularly to offsite recycling --EDF scorecard indicates high risk --not previously reviewed by DTSC
Metal Finishers Using Cyanide Plating Processes	--regulatory opportunity re: hazardous waste treatment permits for cyanide destruction
Pesticide Formulators	--high Advisory Committee interest in effects of pesticide manufacture and use in California

It is anticipated that one or more of these industry types will be selected at the beginning of each of the two years covered by this workplan. Initially, source reduction documents will be reviewed for completeness. A more detailed technical review will follow, which will include an analysis of the industry's source reduction activities, accomplishments and/or failure to make progress in reducing hazardous waste generation. The technical review also involves working with companies that may not have fully complied with the planning requirements to bring them into compliance with this generator requirement, which may include onsite technical assistance. During the last quarter of each of the two years, staff will prepare fact sheets, reports, and other documents to share findings for the particular industry sector that has been targeted.

DTSC's goal for the SB 14 planning program has consistently focused on encouraging businesses to seriously consider source reduction opportunities. For FYs 00/02, staff will continue to work closely with the CUPAs to assure that local inspection and enforcement programs include SB 14 compliance as a generator requirement, and that DTSC's enforcement and follow-up efforts are coordinated with local government efforts. A large part of this effort will be ensuring compliance with the new Summary Progress Report requirements, established by SB 1089 of 1996. An estimated 4,000-5,000 generators failed to submit the required documentation to the state. Follow-up was initiated in FY 99/00 and will continue into FY 00/01. In addition, DTSC will be expending resources to compile and analyze the results of the SPR submittals.

Table 19: SB 14 Implementation Workplan Summary

Activities	Outputs	Comments
1. Outreach & Education -Organize and conduct training -Make presentations -Respond to inquiries	As requested or when DTSC determines need --increased compliance with SB 14 --increased quality of SB 14 efforts	Continues periodically over the two-year workplan.
2. SB 14 Document Request and Review	--analyzed data for targeting --technical review and analysis of approximately 100 source reduction plans --remote and onsite technical assistance, as needed --enforcement followup when necessary --results analysis --report preparation and distribution	Anticipate targeting one or more industries for each of the two years.
3. CUPA Assistance -Technical assistance -Training	--effective utilization of hundreds of CUPA hazardous waste inspectors to promote p2 --increased CUPA inspector capacity to review/enforce SB 14 plan requirements; --respond to CUPA requests for information, referrals	
4. Summary Progress Reports (SPR) -Summary Progress Report follow-up -Analyze and compile data	--increased compliance with SB 14 --publish results of SPR data analysis	

Local Government Support

California's regulatory structure places much of the day-to-day work with businesses, especially hazardous waste generators, at the local government level. For this reason, DTSC has consistently placed a high value on building and supporting local government pollution prevention programs. DTSC's efforts in this area focus primarily on information transfer and assistance, especially through work with six regional pollution prevention committees that have been established to facilitate communications between local programs. Local programs participating on these regional committees include sewerage agencies, local fire departments, air districts, environmental health programs, household hazardous waste collection programs, storm water run-off programs and regional water quality control boards. The regional committees typically meet on a bi-monthly basis. DTSC staff will attend most meetings to share information between committees, as well as present information from DTSC and Cal/EPA.

DTSC will also sponsor the annual local government pollution prevention conferences. For the last two years, this has been combined with an EPA Region IX-supported Western Regional Pollution Prevention Network conference. DTSC will also continue to support Pollution Prevention Week (September 17-23, 2000 and September 16-22, 2001) by developing and

distributing posters, information packets, press releases, and other support materials to local pollution prevention programs.

At the DTSC regional level, the Office of External Affairs has been funded through the RCRA grant to support the Bay Area Green Business Program. This is an ongoing demonstration project to show how market forces can encourage more pollution prevention implementation. Local governments in the San Francisco Bay Area have developed industry-specific standards that include both compliance and pollution prevention elements. “Green Businesses” that meet the standards are given recognition by the local government and promoted to the public as a preferable place to do business. DTSC’s provides technical support to the program and assists with technical detail and coordination between various state and local regulatory agencies.

Table 20: Local Government Support Workplan Summary

Activities	Outputs	Comments
1. <u>Support Local Committees</u> -Attend regular meetings of 6 regional local govt. p2 committees -Technical support (publish/distribute minutes, etc.) -Establish new regional committees when appropriate (e.g., San Diego area)	-- support of dozens of California local agencies that provide pollution prevention assistance and information to businesses --ongoing training for several hundred local p2 staff -- increased multi-media coordination by working with local and regional p2 programs across all environmental media	
2. <u>Pollution Prevention Week</u> -Prepare & distribute materials -Work with EBMUD on poster; print & distribute -Prepare DTSC press release, -Track & catalog events/results	--publish and distribute 1,500 posters that local govt. staff post in hundreds of public locations statewide --facilitate and participate in one week of statewide activities during Sept.17-23, 2000, to promote p2 (over 100 events statewide)	
3. <u>Annual Conference</u> -Work w/ committees on agenda topics -Coordinate with WRP2Net on event logistics -Assist in securing speakers -Attend conference -Distribute results	--training/conference/coordination opportunity for 150 local, state and federal p2 staff across California	
4. <u>Bay Area Green Business Support</u> -Attend periodic meetings -Provide technical support on targeted industries -Review industry-specific criteria	--strengthened local government efforts to promote p2 to small businesses and to communities by recognizing “green” businesses.	The lead for DTSC’s involvement in this project is in the Office of External Affairs

Integrating Pollution Prevention into Regulatory Programs

To be successful, pollution prevention must be viewed as a legitimate tool to be used by the regulatory programs to achieve their mission of protecting public health and the environment.

One of OPPTD's biggest challenges, as well as one of the biggest opportunities, is to help DTSC build pollution prevention into the mainline regulatory programs of DTSC. This includes inspections, enforcement, permitting, regulations development and the CUPA oversight elements of the HWMP. The challenge is to change the way pollution prevention is viewed and make it a part of the core program activities, making it a tool that can be used at the appropriate time and place, while recognizing that it may not be appropriate for application in all situations. To be fully integrated, pollution prevention cannot be seen as more work that is piled upon the existing workload.

A long-term goal for integrating pollution prevention into DTSC's regulatory programs is to assure that every interaction, whether permitting, inspections, enforcement, fee, regulations reform, technical assistance, etc., that DTSC has with the regulated community sends a consistent message about the value pollution prevention as a highly desirable approach for protecting public health and the environment.

Work activities in this area include the development of a pilot project with HWMP's Permitting Division to coordinate the review of SB 14 plans with permit renewal applications for "on-site facilities" (facilities that treat waste generated on-site). The pilot's objective is to demonstrate how pollution prevention can assist in the permitting process. OPPTD staff will continue its ongoing efforts to ensure that pollution prevention language is incorporated into DTSC's Permit Guidance Manual. Pollution Prevention staff will also be available to work with enforcement staff to identify and evaluate supplemental environmental projects (SEPs) for use in settlements¹⁸.

Table 21: Regulatory Integration Workplan Summary

Activities	Outputs	Comments
1. <u>Regional P2 Support</u> --Provide training and assistance to CUPAs --Build pollution prevention into CUPA evaluations --Provide support on SEPs. --Distribute information to regional offices	--leverage resources; increased utilization of regulatory staff to promote p2 --training as needed and requested --CUPA evaluations routinely include assessment of SB 14 compliance; p2 activity --CUPA enforcement includes implementation of SEPs	
2. <u>Permitting</u> --Conduct pilot project on four to five facilities --Revise permit guidance manual	--increased capacity to promote p2 through DTSC permitting activities --completed pilots --1 Permit Guide (Revisions)	Started in FY 99/00; to be completed in FY 00/01.
3. <u>Inspections and Enforcement</u> --Maintain inventory of p2 SEPs --Provide SEP training to inspection, enforcement, and legal staff on --Provide support on individual SEPs	--increased capacity to promote p2 through inspection/enforcement activities --SEP inventory --SEP training as requested	The number depends on the number of enforcement cases that are appropriate for a p2 SEP

¹⁸ A "supplemental environmental project" allows a facility undergoing enforcement to utilize a portion (no more than 25%) of a monetary penalty to perform specified pollution prevention projects or activities.

Technical Studies & Information Transfer

DTSC conducts, sponsors or participates in a variety of pollution prevention projects designed to develop new information or to transfer existing knowledge to new audiences. During FY 00/01, DTSC will continue to participate and support a partnership of the SCAQMD, the Los Angeles Sanitation Districts, and the Orange County Sanitation Districts designed to encourage businesses to evaluate and implement alternatives to volatile organic solvents. DTSC will work with these partners to distribute information regarding effective solvent alternatives and regulatory requirements.¹⁹

Another ongoing partnership project initiated in FY 99/00 is work with the Department of Health Services (DHS), which regulates medical waste. DTSC is providing staff support and contract funding to build mercury waste reduction into a federally-funded effort to reduce PVC plastics in medical waste, and support DHS's ongoing efforts to provide assistance and guidance to the medical community on managing infectious waste. Workshops presented to hospitals late in the final quarter of FY 99/00 will continue to be refined and presented in other areas of California during FY 00/01.

In FY 99/00, DTSC completed an EPA grant-funded study of safer commercially-available products for use in janitorial services. This project identified a number of viable options for building managers (the "consumer" of the products), who specify the services to be provided by the janitorial companies. In FY 00/01, DTSC will be working with the state's Department of General Services to include these recommendations in state-run offices.

A new project in development is to work with HWMP to incorporate cyanide source reduction requirements into tiered permit regulations proposed for this waste stream. DTSC will conduct studies to evaluate the technical and economic feasibility of cyanide-free plating options. If decisions are made to change the tiered permit action level for cyanide, attempts will be made to, at a minimum, require detailed consideration of alternatives and justifications as to why cyanide source reduction alternatives may not be implemented at a given business.²⁰

To facilitate information transfer, pollution prevention staff will work closely with DTSC Office of Information Management to place more of its technical pollution prevention information on DTSC's web site. Finally, DTSC will continue the "retired engineers" program in partnership with U.S. EPA, the Western Regional Pollution Prevention Network and PETE. With grant funding from U.S. EPA, retired engineers with years of industrial experience were hired. These

¹⁹ The substitution of aqueous cleaners for petroleum-based solvents provides an excellent case-study example of the trade-offs between environmental media that can occur when evaluating and implementing less-toxic alternatives, including the need for the various medium-specific regulatory agencies to work together to come up with the "best" overall environmental solution. In addition, this work has direct applicability to the automotive repair industry project described earlier in this chapter.

²⁰ This project could also have been presented under the Regulatory Integration focus area.

engineers research and provide technical assistance to other agencies and businesses on source reduction alternatives for specific wastes or industrial processes.²¹

Other activities related to development and transfer of information include providing on-site technical assistance; preparing new or updating existing fact sheets and other technical documents; and providing speakers or making presentations at conferences, meetings, training sessions or college classes.

DTSC's ability to respond to unsolicited requests for on-site technical assistance is limited by the availability of p2 staff. On-site assistance has not been a high priority for the pollution prevention program, because of the high cost of working with individual generators versus the overall benefits to the state in terms of reduced waste amounts. Conversely, we make it a much higher priority to provide speakers and make presentations where we have the potential of reaching a much larger number of generators—and on programs that can reach large numbers of generators (e.g., integrating pollution prevention into inspections) or programs such as SB 14 that provide incentives for reductions.

Table 22: Technical Studies & Information Transfer Workplan Summary

Activities	Outputs	Comments
1. <u>Solvent Alternatives</u> --Manage contract --Provide technical input on regulatory issues --Print and distribute information	--identification of solvent alternatives --resolution of possible regulatory barriers to use of less-toxic alternatives --published report(s) on solvent alternatives	
2. <u>Mercury/Hospitals</u> --Participate in site visits and workshops	--increased awareness of alternatives to mercury use, leading to decreased use of mercury in hospitals	Conducted in coordination with Dept. of Health Services, which received funding support from U.S. EPA. The final report and workshops are deliverables under a U.S. EPA PPIS grant
3. <u>Janitorial Products</u> -Work with General Services -Information transfer	-- increased awareness of alternatives to toxic cleaning products, leading to decreased use of toxic cleaning products within state operations	
4. <u>Cyanides</u> --Meet with HWMP --Coordinate schedules for cyanide research and regulation development --Research cyanide alternatives and	---increased technical ability and motivation for industry to identify, evaluate and implement alternatives to cyanide --increased coordination with HWMP	This project is somewhat dependent on the HWMP's progress in establishing regulations for onsite cyanide treatment. This first DTSC

²¹ The Retired Engineers Program is another way that OPPTD is providing support to local government pollution prevention programs.

costs --Participate in regulations development process --Share cyanide alternatives information with affected industry	--increased DTSC knowledge about cyanide in plating; cyanide alternatives --first DTSC use of p2 within a HWMP regulatory process --build OPPTD relationship w/HWMP --demonstrate benefit of p2 to HWMP staff	use of p2 within a regulatory process has the potential to demonstrate the benefits of p2 re: increased regulatory compliance; superior environmental benefit.
5. <u>Internet Access</u> --Format existing/new documents into an internet-compatible format --Work with OEIM to get information added to DTSC's web site --Put special event notices on web site (i.e., P2 Week materials)	--increased opportunity for industry and public access to technical p2 documents	OPPTD has a backlog of materials that need to be uploaded onto DTSC web site
6. <u>Retired Engineers Program</u> --Manage contract --Provide guidance and support to engineers --Promote the program	--improved DTSC capacity to respond to requests for technical p2 information	This project is funded through a PPIS grant from EPA
7. <u>Provide On-site Technical Assistance</u> --Background literature search --Conduct visit --Follow-up recommendations	--5-10 site visits, as assistance is requested --increased industry ability to reduce waste --increased DTSC technical knowledge --improved DTSC relationship with industry	This is in addition to site visits conducted as a part of facility SB 14 plan reviews
8. <u>Technical Document Development</u> --Research issue --Prepare document --Work w/ state printer	--increased capability of industry to reduce waste generation --3 documents	
9. <u>Presentations</u> --Prepare materials --Presentations	--10-15 presentations, as requested --increased awareness of p2 opportunities	

DTSC Public Involvement and Outreach

DTSC's Pollution Prevention Advisory Committee was established by SB 1916 in FY 99/00. During FY 20/01, the Committee will continue to meet. It is anticipated that three or four meetings will be conducted during the year. Staff will also research areas of interest to the committee and prepare progress reports on the status of efforts to implement this workplan, which was developed with the advice of the committee.

Table 23: DTSC P2 Advisory Committee Support, Workplan Development, and Public Involvement Planning

Activities	Outputs	Comments
<p>1. <u>Advisory committee (AC) staff support</u></p> <ul style="list-style-type: none"> --Manage facilitator contract --Prepare materials for advisory committee --Participate in AC meetings --Data analysis and refinement (for fp2 progress measurement and future p2 targeting) 	<ul style="list-style-type: none"> --ongoing opportunities for public awareness of and involvement in DTSC's p2 program --refined AC legislative recommendations --ongoing staff support to Advisory Committee -- progress reports on DTSC's implementation on the workplan --research areas of interest to AC --understanding of hazardous waste data for targeting & measurement purposes 	

Other Activities

DTSC performs a number of activities that do not easily fit into any one of the above categories. In general, these activities tend to be cooperative projects involving commitment of staff time to support projects for which OPPTD is not the lead, but a supporting player. These include

- coordinating with U.S. EPA Region IX's Pollution Prevention Team (quarterly meetings, review and comment on projects and deliverables, serving as speakers at U.S. EPA-sponsored workshops, etc);
- participating as one of the principals of the Western Regional Pollution Prevention Network (a consortium of pollution prevention programs within Region IX);
- attending U.S. EPA-sponsored Merit Partnership meetings (quarterly);
- serving on technical advisory committee to the U.S. EPA-sponsored Access to Capital Project (focused on providing loans for metal finishers);
- conducting pollution prevention projects and activities along the California/Mexico Border (conferences, training, technical assistance (funded by the RCRA grant, up to ½ PY);
- providing input into the Cal/EPA ISO 14000 pilot project where it involves pollution prevention; and
- participating on national pollution prevention workgroups (e.g., National Pollution Prevention Roundtable, the Forum on State and Tribal Toxics Actions (FOSTTA), the Association of State and Territorial Solid Waste Management Officials (ASTSWMO), etc.

The Pollution Prevention Branch provides assistance to OPPTD's Technology Development Branch on certification projects involving pollution prevention technologies, including participating in final review panels. Resources are also expended on reviewing proposed state and federal laws and regulations, preparing grant applications (Pollution Prevention Incentives to States, RCRA, etc.). A final activity involves organizing and providing pollution prevention support to federal facilities in California. This involves attending periodic meetings, coordinating federal facilities' SB 14 plan preparation with similar plans required by federal executive order, transferring and sharing technical information, and working with specific federal facilities on demonstration projects.

Because OPPTD is not the lead organization on most of these projects, the level of resources that go into these projects tends to be limited by time and staff availability. Some of these projects may be quite deserving of more significant resource commitments if more staff time were available.

Table 24: Other DTSC P2 Activities Workplan Summary

Activities	Outputs	Comments
1. <u>Coordination with EPA Region IX</u> -Quarterly meetings -Provide speakers at EPA events	--ongoing coordination/communication with U.S. EPA p2 program	DTSC p2 staff work closely with U.S. EPA p2 staff to coordinate activities.
2. <u>Western Regional Pollution Prevention Network</u> -Participate in Steering Committee meetings -Assist in preparing reports for the federal grant -Assisting in preparing grant applications	--consistent and ongoing availability of p2 information, training and conference opportunities for CA local p2 programs.	This is an integral part of DTSC's support to California's local government p2 programs.
3. <u>Merit Partnership</u> -Quarterly meetings -Comment on projects		
4. <u>Access to Capital</u> -Participate on advisory committee -Review loan applications -Evaluate technologies	--coordination with entities concerned with providing financial resources for p2	
5. <u>Mexico Border</u> -Assist DTSC border coordinator -Attend state and regional committee meetings -Identify targets -Organize and conduct training -Respond to inquiries -Arrange for translations -Provide information for grant reports	--increased knowledge of p2 within border facilities --support to overall DTSC border efforts	This includes participation in multi-agency, multi-state or multi-national meetings. This activity will be expanded if the Budget Change Proposal is approved.
6. <u>Cal/EPA ISO 14000 Pilot Project</u> -Provide technical support to the project	--consistent effort to include p2 as a primary element of EMS pilots.	
7. <u>National Programs</u> -Participate in NPPR Conference (2) -Participate in periodic ASTWMO meetings (2-3 per year) -Participate in FOSTTA meetings (3 per year) -For each of the above, review and comment on U.S. EPA proposals	--increased DTSC knowledge of national efforts --continuing awareness of trends in environmental management and pollution prevention --ongoing training opportunities --DTSC input into national p2 initiatives	

<p>8. <u>Technology Certification</u> -Participate on certification review teams -Provide technical reviews and comments</p> <p>9. <u>Laws and Regulations</u> -Review proposed laws and regulations from a pollution prevention perspective and provide comments</p> <p>10. <u>Grant Applications</u> -Prepare grant applications for DTSC pollution prevention funding -Prepare letters of support for others seeking grant funding</p> <p>11. <u>Federal Facilities</u> -Facilitate and organize periodic meetings with Dept. of Defense facilities -Coordinate SB 14 with federal Executive Order plans -Participate in federal facilities conferences</p> <p>12. <u>Dept of Commerce Loan Review</u></p>	<p>--ongoing coordination between p2 and technology development --exploit opportunities to promote p2 technologies</p> <p>--exploit opportunities to provide p2 incentives through regulatory processes</p> <p>--exploit opportunities to fund special DTSC or local-level projects through federal funding</p> <p>--support DoD efforts to implement source reductions --streamline DoD pollution prevention planning efforts</p> <p>--ensure loans are appropriate (p2, not treatment) --increased availability of funding for facility p2 efforts</p>	
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Chapter 5: Economic and Financial Incentives for Pollution Prevention

There are numerous costs associated with the generation and management of hazardous waste. Pollution prevention programs, including California's, have long cited pollution prevention's potential for reducing those costs as a significant reason for businesses to actively pursue pollution prevention strategies. In the infancy of pollution prevention, waste management cost avoidance was assumed to be sufficient motivation alone to inspire widespread pollution prevention implementation. During the last decade, however, pollution prevention professionals have observed that pollution prevention did not assume what many felt was its rightful place as the primary waste/pollution management option for industry.

Many studies identifying the barriers to pollution prevention have been conducted, identifying a broad range of reasons why facilities may not choose to focus efforts on pollution prevention. DTSC first started looking at economic incentives for pollution prevention (called waste reduction at the time) in 1984, through a contract with ICF, Inc. ICF partnered with banking and accounting firms to perform a major study of financial incentives for waste reduction. The results of this study included a finding that for fees to be effective in changing business's waste generation practices, they would have to be raised to well over \$100 per ton (deemed politically infeasible at this time). Loans and loan guarantees were looked at more favorably, but there were concerns about how to define eligible technologies, administrative costs associated with processing loans, and the ability of businesses to repay the loans. Tax credits were also looked at more favorably, but the Department of Finance had concerns about how these could affect the general fund. Similarly to the difficulty in defining appropriate technologies for loan eligibility, there was concern about how to define qualifying criteria such that tax credits were not given to every business that investing in modernization. The report also suggested a grant program for alternative technology development and demonstration. In the end, only the grants suggestion was implemented. Several years later a small loan program was created under the Department of Commerce.

The Department participated in a major study with Cal/EPA in 1993 to encourage new technologies. This project, entitled the California Environmental Technology Partnership (CETP), included consideration of pollution prevention technologies. The key findings of this project were that technology developers needed assistance in taking their ideas from demonstrated pilots to commercialization, and that the end users needed information to validate the claims being made by technology vendors. Out of the CETP came the establishment of the Hazardous Waste Environmental Technology Certification Program in DTSC. Later, the Certification Program concept was applied to the California Air Resources Board and the State Water Resource Control Board in Cal/EPA.

This chapter will focus on economic and financial incentives existing in California to assist industry, especially smaller facilities, in implementing pollution prevention strategies. Several other entities have compiled exhaustive lists of financial instruments for environmental

improvements. This report will not attempt to repeat that work. Rather, we will survey the application of these mechanisms in California, specific to hazardous waste generation.

Incentives for reducing waste

Economic incentives for pollution prevention can be broadly characterized into two categories: positive and negative. Positive incentives include loans, loan guarantees, tax credits, and grants. Negative incentives include taxes and fees, including from generator fees, disposal fees, and feedstock taxes.

Positive Incentives

California Hazardous Waste Reduction (CHWR) Loan Program

The California Trade and Commerce Agency, through its Office of Small Business, administers a \$3 million revolving loan program to finance equipment or a production practices that either achieves a net reduction in waste generated or a lessening of the hazardous properties of the waste. Businesses that have an EPA identification number and generate hazardous waste are eligible to apply. Loan proceeds can be used to finance equipment and/or changes in production. The minimum loan amount is \$20,000; the maximum \$150,000. Loan applications are reviewed by DTSC to ensure technical eligibility. Loan terms are for seven years with adequate collateral equity required. The interest rate and fees are below conventional market rates (5.2% at present). A loan fee of 2% must be paid at final loan closing.

Since 1995, 64 businesses have received funding for the purchase of pollution prevention equipment. While this loan program is not specifically targeted for any one industry type, all but one of these loans was used for the purchase of more efficient and less-polluting dry cleaning equipment.

Department of Commerce staff indicate there is much demand in the dry cleaning industry for these loans. The program is marketed through the Small Business Development Centers, and through the dry cleaning associations (conferences, seminars, etc.). The Department of Commerce works closely with local air quality management districts to adequately deal with compliance issues facilities may have before issuing loans.

When asked if this loan program could address the financing needs of other industry types, Commerce staff indicated that funds are limited. At present, an average loan is for \$65,000, with \$500,000 available for loan. From this limited analysis, it appears this loan program is successful at meeting the pollution prevention equipment needs of a specific industry. To a large degree, the specific characteristics of this industry's regulatory situation have created the opportunity for the program to succeed. For one thing, dry cleaners need not research alternatives prior to identifying equipment needs. In addition, the new equipment can be dropped in to take the place of the old; product quality and extensive training is not an issue. Because of the discrete and relatively low cost of purchasing less-polluting dry cleaning equipment, loan program funds can be stretched to assist a larger number of businesses. Finally, there is certainty that a regulatory compliance issue will be resolved with the purchase and installation of the equipment.

Some of these issues would not be so clear-cut for other industry types wishing to use the loan program. For example, the research portion of pollution prevention implementation, where wastes are evaluated, sources identified, and alternatives evaluated, is to a great degree a given for the dry cleaners. For many facilities, identifying the correct pollution prevention strategy can be a time- and resource-consuming process, involving uncertainty. Another barrier is banks' reluctance to lend to certain industry types. Banks wish to avoid the possible acquisition of contaminated property, should a small business default on a loan. These issues may at least partially explain why other kinds of businesses are not taking advantage of the program. Finally, even if other industry types were to apply for loans, the available funds would likely be insufficient to meet significant new needs.

EnviroLoan

The Environmental Finance Center, Region IX, working with U.S. EPA, the Small Business Administration (SBA), trade association representatives, POTWs and other public agencies, as well as private for-profit and non-profit organizations, developed a pilot Environmental Loan Program for small metal finishers called EnviroLoan. The Los Angeles Area District Office of the Small Business Administration has agreed to set aside funds to guarantee loans up to \$150,000 for metal finishers wishing to implement pollution prevention in the Los Angeles area. The program was launched in October 1999.²² Because the program is in its infancy, no results are available at this time.

Technology Development Grant Programs

State grants for pollution prevention technologies have been an integral, though sporadic, part of DTSC's program since 1985, when legislation was enacted to provide such funding. Funding up to \$1.8 million/year provided funds for environmental technologies, including pollution prevention technologies. While the intent of the program was to foster the development of prevention (as well as control) technologies, in practice more control technologies ended up in the program. Because a pollution prevention technology would be applied within a process before waste or pollution is created, such technologies are indistinguishable from any other type of technology designed to improve process efficiency. This results in difficulty identifying, and marketing to, pollution prevention technology developers and vendors, and ultimately results in a preponderance of control/mitigation technologies within technology demonstration and financing programs, including California's.

Approximately 140 projects were funded from 1985 to 1994, totaling \$8,800,000.00. Over the active life of the Hazardous Waste Reduction Research Demonstration Grant Program, there were about 40 demonstration projects, i.e., construction or field evaluation. There were about 60 waste minimization projects, i.e., source reduction or recycling. In FYs 92/93 and 93/94, the last two years for which significant funding was available, approximately \$960,000 was available for 15 projects. About two-thirds of the then-available grant funds was spent on

²²Information from Sarah Diefendorf, Region IX Environmental Finance Center

demonstration projects, including construction, field evaluation, and the Center for Evaluation of New Environmental Technologies (CENET) at the University of California at Davis.

Examples of waste minimization projects funded under this program include:

- C Minimization of Mixed Radioactive/Hazardous Solvent Wastes;
- C In-Plant Recycle and Reduction of Copper Etchant Waste in the Printed Circuit Industry;
- C Cyanide-Free Electroless Silver Technology for Reducing Waste in the Plating and Printed Circuit Industries;
- C Evaluation of Production-scale Chemical Processing Bath Utilizing a Cobalt-based Material to Seal Anodic Films; and
- C Evaluation of a Production-scale Ferric Sulfate Paste for Prebond Etching of Aluminum Surfaces.

In 1986, this program funded what was perhaps the first local-level pollution prevention program in the nation. The County of Ventura demonstrated that when provided with pollution prevention information during routine inspections, hazardous waste-generating facilities respond with significant (ranging from 25 to 75 percent) reductions in waste generation.

California's funds for this grant program have diminished over time and are currently virtually nonexistent. DTSC's current efforts in the area of technology development focus on its fee-for-service environmental technology certification program.

NICE3

NICE3 (National Industrial Competitiveness Through Energy, Environment and Economics) is a federal grant program for projects that reduce energy use and pollution generation. At least eight California companies have completed projects using this funding source. In the past, OPPTD has partnered with the California Energy Commission to apply for funding on behalf of specific companies. DTSC is not currently involved in NICE3 projects.

Supplemental Environmental Projects

A "supplemental environmental project" (SEP) provides facilities undergoing enforcement for violation of environmental regulations the opportunity to "buy down" a portion of the penalty by implementing pollution prevention strategies. This includes the purchase of equipment that will, by reducing or eliminating waste generation, help the facility to stay in compliance in the future. Both Cal/EPA and DTSC have policies for the utilization of SEPs.

Vigorous implementation of the SEP policy would increase the implementation of pollution prevention in California, particularly if it were implemented by CUPAs and local district attorneys when enforcing the generator compliance program. It is important to remember, however, that limitations exist in the application of this policy.

SEP Limitations

1. Pollution prevention programs cannot initiate an SEP. Assistance must be requested from the enforcement program initiating the action. Therefore, enforcement staff and attorneys must be aware of the policy and committed to its implementation for SEPs to occur.
2. DTSC's SEP policy provides a limit of 25% of the total penalty minus administrative costs for environmental improvements via an SEP. For example, if the total penalty is \$50,000 and DTSC's administrative costs are \$10,000, the total available for an SEP would be 25% of \$40,000, or \$10,000.
3. Monitoring the completion of an SEP is more work for enforcement programs. The simple collection of penalty dollars is much easier.
4. Most pollution prevention projects involve uncertainty. There may need to be a back-up plan in place if the pollution prevention strategy does not perform as expected.
5. Some enforcement staff, as well as environmentalists, do not believe facilities that do not comply should be given the opportunity to use penalty dollars to, essentially, become more efficient. They believe facilities should do this on their own initiative. Some also feel that including an SEP in an enforcement action dilutes the punishment effect of the action.
6. Finally, not all enforcement situations should even be considered for an SEP. The appropriate application of the SEP policy would require that judgment be used on a case-by-case basis.

Despite these limitations, OPPTD believes that a more vigorous application of California's SEP policy, and more particularly the application of the policy within the CUPA programs, would result in a number of benefits, including:

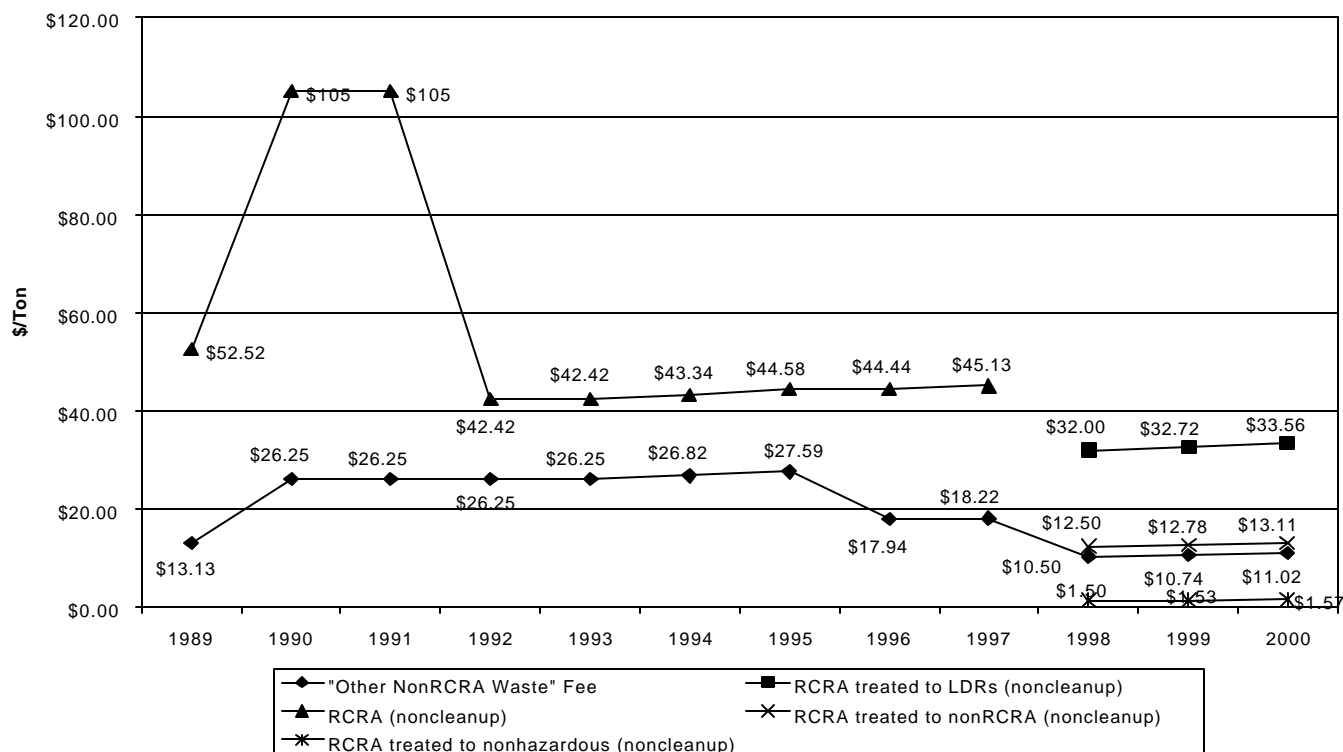
- , environmental benefits resulting from reducing hazardous waste generation;
- , a less adversarial relationship between enforcement agencies and industry;
- , increased market for pollution prevention consultants and technologies; and
- , better integration of pollution prevention into overall agency activities at the state and local levels.

Negative Incentives

Disposal fees

Waste management and disposal costs are often said to provide incentives for companies to generate less waste. Figure 11 shows a subset of the land disposal fees, in an effort to show the trends over time. It is important to note that in 1998, SB 660 of 1997, which reformed DTSC's fees, changed the categories of waste, rendering such comparison difficult. Nevertheless, we can get some idea of the changes in fees over time. Federal hazardous wastes ("RCRA wastes" rose

Figure 11: Trends in California's Haz Waste Disposal Fee, 1989 to 2000



from \$52.52/ton to \$105/ton,²³ then declined to approximately \$42/ton from 1992 through 1997. To extend that trend to 2000, we added the three RCRA disposal categories that are not associated with site cleanup operations: "RCRA treated to land disposal restrictions" (LDRs), "RCRA treated to nonRCRA", and "RCRA treated to nonHW".

Current disposal fees for RCRA wastes treated to Land Disposal Restrictions (established in 1998) are approximately 65% lower than the 1989 rate. For nonRCRA wastes, the current disposal fee is 16% lower than the 1989 rate. Of perhaps more significance is the effect of SB 660. The fee structure established at that time has resulted in disposal fees that are consistently the lowest in DTSC's history. Between 1997 and 1998, disposal fees for RCRA wastes dropped nearly 30%. Disposal fees for nonRCRA wastes fell 57%.

Overall, SB 660 reduced facility, generator, and disposal fees by approximately 23.7%. In addition, a second reduction of 20% was applied to the disposal fee rates, for a total reduction in the disposal fee of 43.7%. The second reduction will be rescinded January 1, 2001, for a long-term reduction of 23.7% in the disposal fee.

²³ Due to the fact that prior to January 1, 1991, feepayers were also required to pay a Superfund fee for waste disposed to land. SB 1857 eliminated the Superfund fee effective January 1, 1991, but doubled the disposal fee rates.

Finally, it is important to note that currently there is no disposal fee for wastes transported and disposed out of California. The absence of such a fee may encourage generators to ship waste out of state.

Generator fees

California generators are also charged a “generator fee,” imposed on generators producing five tons or more hazardous waste annually. The 2000 rates were:

<u>Generator size</u>	<u>Fee (per generator site)</u>
< 5T/yr	\$ -0-
5 but < 25 T/yr	\$147
25 but < 50 T/yr	\$1,178
50 but <250 T/yr	\$2,945
250 but <500 T/yr	\$14,725
500 but <1,000 T/yr	\$29,450
1,000 but <2,000 T/yr	\$44,175
2,000 or more	\$58,900

On the surface, this fee structure appears to provide incentives to reduce waste generation. Larger-quantity generators do pay more, in the absolute. However, the fee structure results in a per ton rate that varies from \$6 to \$56 per ton. In June 1999 the California State Auditor found the generator fee structure not equitable²⁴. The report²⁴ claims that businesses generating large quantities of hazardous waste are in effect subsidized by those that generate less. To illustrate, the report states that

businesses that produced 45 percent of the total tons generated in calendar year 1998 contributed only 20 percent of the total fees collected. Similarly, because they produce more waste, some generators pay significantly less per ton than other generators. Thus, some businesses provide a disproportionate share of the financial support to the hazardous waste regulatory process. Moreover, because in some instances the per-ton cost decreases as the volume generated increases, little or no incentive exists for some businesses to reduce the amount of hazardous waste they generate (emphasis added).

The report found that the smallest and largest generators (as measured by amount of hazardous waste generated) generally pay the lowest rates per ton:

For example, businesses that generate either 2,000 tons or 4,000 tons of waste pay a per-ton fee ranging from \$28 to \$14 per ton. The rate per ton is even lower for a business that generates more than 4,000 tons. Meanwhile, a business that generates between 250

²⁴ Department of Toxic Substances Control: The Generator Fee Structure is Unfair, Recycling Efforts Require Improvement, and State and Local Agencies Need to Fully Implement the Unified Program, California State Auditor, June 1999

tons and 499.99 tons of waste pays per-ton fees ranging from \$56 per to \$28 per ton, which is twice the rate for the largest generators of hazardous waste.

This middle category of businesses (between 250 and 499 tons) generated 9% of the waste; however, those businesses paid 17% of the total revenue.

Environmental Fee

California corporations in specific industry types (identified by SIC Code) are required to pay an **Environmental Fee**. This fee, established in 1997, is graduated based on the number of employees. In 2000, the Environmental Fee rates were:

<u>Corporation Size</u>	<u>Fee</u>
< 50 employees	\$ -0-
50 but < 75 employees	\$209
75 but <100 employees	\$367
100 but <250 employees	\$734
250 but <500 employees	\$1,573
500 but <1,000 employees	\$2,936
1,000 or more	\$9,963

Because the environmental fee amount is not related to the quantity of waste generated, it provides no incentive to reduce waste.

Activity Fees

The current DTSC fee structure includes numerous other fees besides disposal, generator and environmental fees. These fees are typically associated with specific regulatory activities, such as permit applications fees, facility fees, EPA identification number verifications fees, post-closure fees, and manifest fees. Some of these fees can be quite significant; for example, the land disposal permit application fee is over \$400,000; the associated annual fee after the permit is issued is over \$200,000 per year. Unfortunately, like the other fees, there is often not a clear nexus between reducing the amounts and toxicity of the waste produced and the amount of fee owed. Appendix 8 contains details on the various DTSC fees.

Fines and Penalties

One of the clear motivators for compliance with any law is the fear of getting caught and having to pay fines and penalties. Hazardous waste laws are enforced through administrative orders, civil prosecution and criminal prosecution. For many of the hazardous waste laws, the penalties can be up to \$25,000 per day. Criminal prosecution can and has resulted in jail sentences. A serious enforcement program is integral to the pollution prevention/economics equation. If a business can simply throw its hazardous waste into the dumpster with impunity, there is little financial incentive to invest in pollution prevention. However, if businesses must shoulder the full costs of properly managing wastes from cradle to grave, expenditures for pollution prevention become much more attractive.

Long-Term Liability

Like fines and penalties, long-term liability for waste can provide a significant incentive for pollution prevention, particularly for large businesses with “deep pockets.” Under the state and federal Superfund laws, generators can be held responsible for cleaning up hazardous waste, at any future time that the material creates an environmental threat. Site remediation can be extremely expensive. It logically follows that if wastes can be reduced or eliminated, then so too is the long-term liability reduced. It is unclear, however, whether many businesses consider long-term liability in their decision-making. Consideration of such liability means thinking about uncertainties--will the landfill that I’m sending my waste to leak in 25 years? Will I be identified as a responsible party?—that occur over a long time horizon. Most businesses are preoccupied with their immediate future.

Discussion

It is not clear whether generators would respond even if disposal and generator fees provided strong incentives to reduce waste generation. Shortcomings in standard business accounting practices result in diminished incentives for companies to consider reducing, rather than managing, wastes:

- Standard accounting practices obscure waste management costs.

While the aggregate cost of generating and managing waste is significant, it is clear to pollution prevention professionals that standard accounting practices have obscured waste management costs, particularly from those responsible for process lines that actually generate waste. Professionals in the environmental consulting and accounting field estimate that waste management and disposal costs are themselves only a part of the picture--generally, an amount roughly equal to five times the ~~A~~ledger costs for managing waste are truly incurred. The recognition of the true costs of generating waste and pollution can help businesses make more informed decisions about investing in less-polluting technologies. For the present, the lack of such recognition renders waste management and disposal costs ineffective at providing significant motivation to reduce waste. Indeed, some pollution prevention programs are shifting from emphasizing the cost savings potential to citing ~~A~~reduced regulatory burden~~@~~ and ~~A~~reduced liability~~@~~ as incentives to reduce waste.

Finally, because materials purchases are more easily tracked, some companies rely more on pollution prevention’s impact on materials use, rather than waste disposal and management costs, when performing economic analyses.

- Smaller and medium-sized businesses are more motivated by compliance than by expected cost savings.

Recent research indicates that small businesses are particularly responsive to regulatory pressures as incentives for implementing pollution prevention strategies (this is possibly due to the fact that regulatory compliance costs are likely more visible in the small business setting).

The Department is currently evaluating its fee structure.

DTSC is currently working with an informal fee task force to identify funding strategies for DTSC. This task force concluded that in fiscal year 2001/2002, DTSC will be forced to significantly reduce programs unless funding levels increase. The task force is reviewing a white paper, which proposes that DTSC:

- obtain \$8.5 million from the state's General Fund;
- raise the existing fee on lubricating oil by \$.02 a quart;
- place a fee on lead acid batteries of \$1 per battery;
- sunset the reduction of disposal and facility fees enacted by SB 660 (already in place); and
- provide a cost of living adjustment for manifest/ID fees.

The task force did not reach consensus on generator and environmental fees; therefore no new proposals regarding these fees were made. Increases in the generator and/or environmental fees may be considered if additional revenue is needed, or if parts of the fee proposal are rejected.

Conclusion

The issue of ensuring that sufficient economic incentives exist for facilities to implement source reduction is complicated. For example, disposal and other waste management fees could be raised to a level that provides a clear incentive to reduce waste. However, this approach will be of limited value until businesses more consistently account for such costs.

The above analysis supports a conclusion that the current fee structure does not provide incentives for California generators to invest in strategies that reduce waste generation. While there may be opportunities to incorporate pollution prevention incentives into any new fee structure that is developed, such incorporation should be coupled with the need to encourage generators to adequately account for the full costs of waste generation.

Increased implementation of pollution prevention strategies will depend on a variety of motivators working in concert to direct businesses toward improved environmental performance. A more thorough understanding of the costs associated with generating waste is needed to move businesses (particularly the smaller ones) toward pollution prevention. In addition, the important role that regulatory standards play should not be overlooked. It is increasingly clear that such standards provide major incentives for smaller and medium-sized businesses to invest in pollution prevention strategies. Clearer connections between programs enforcing such standards and programs providing assistance (both financial and technical) would likely increase pollution prevention implementation in California.

While there may be a need to expand California's current program for financing pollution prevention equipment purchases for smaller hazardous waste generators in California, it is not clear whether such programs are what is needed. The availability of such financing would likely be more successful if linked with technical assistance/consulting programs that would help businesses identify the appropriate pollution prevention strategies for their facilities.

Finally, a number of questions have been raised in this analysis that could require further study, including:

- the effect of hazardous waste management and disposal fees on hazardous waste generation;
- the utility of and need for small business loan programs;
- how accounting practices may tacitly encourage continued waste generation; and
- whether tax credits for pollution prevention should be pursued.

DTSC and the Pollution Prevention Advisory Committee may consider the issues raised in this chapter over the next two years. In particular, it will be important to keep current on emerging economic and market drivers for pollution prevention as businesses transition from pollution control, waste management, and remediation toward sustainable management of resources and infrastructure.

Chapter 6: DTSC Research Projects 1995-Present

As part of its overall mission to identify and promote non- and less-toxic alternatives, DTSC is continually identifying research needs and funding sources for such research. While the availability of these funds is inconsistent, DTSC has nevertheless succeeded, over time, in funding a number of research projects, from a variety of funding sources.

Establishing partners in these efforts is essential. DTSC works closely with funding agencies, as well as the local programs that will benefit from the research, in order to ensure that research findings are disseminated.

Alternatives to Mineral Spirits in Auto Repair Facilities

DTSC, in partnership with the City of Los Angeles Bureau of Sanitation, the Institute for Research and Technical Assistance, and the South Coast Air Quality Management District, produced a series of reports describing the results of a test and demonstration project for water-based cleaning systems in auto repair facilities. Four types of cleaning equipment and four different water-based cleaning formulations were investigated. The three-part series is titled Parts Cleaning in Auto Repair Facilities: The Conversion to Water.

Project starting date: October 1995

Ending date: October 1997

Primary funding source: U.S. EPA's Environmental Justice Pollution Prevention Grant Program

Amount: \$95,000

Contact person: Robert Ludwig

Lawrence Livermore/DTSC Certification Criteria for Solvent Alternatives

DTSC contracted with Lawrence Livermore National Laboratory (LLNL) to oversee a panel of experts from industry, research, environmental organizations, and regulatory agencies. LLNL's goal was to develop and recommend solvent alternatives evaluation criteria for use in California's environmental certification program.

The draft criteria, entitled **Recommendations for a State of California Certification Protocol for Alternative Cleaning Chemistries**, was presented to DTSC by the LLNL panel. A two-stage protocol was recommended by the panel.

Project starting date: January 1997

Ending date: January 1998

Primary funding source: DTSC

Amount: \$100,000

Contact person(s): Phil Loder; Kim Wilhelm

Community Source Reduction Plan Review

DTSC funded five community-based organizations to review SB 14 source reduction planning documents prepared by businesses. Each organization prepared a final report for DTSC describing its experience obtaining the documents, which companies= documents were reviewed, and findings from the reviews. Some of the findings included:

- , many businesses were unaware of SB14's public access provision,
- , some businesses responded to feedback from public interest groups, and
- , checklist-guided reviews helped some businesses to better comply with the law.

In response to group recommendations, DTSC published a brochure entitled **The Citizens Guide to SB14**, designed to assist community groups the community in understanding and disseminating public information about SB14.

Project starting date: May 12, 1997

Ending date: November 12, 1997

Primary funding source: DTSC

Amount: \$28,844

Contact person: David Weightman

Hazardous Waste Inspector Pollution Prevention Training; Survey of Hazardous Waste Generators

This project was conducted as part of Orange County Health Care Agency's work to demonstrate the effectiveness of a pollution prevention approach to hazardous waste inspections in the local hazardous waste inspection agency. Industry-specific pollution prevention training was provided to the inspectors. A post-training survey of inspected businesses (mostly smaller businesses) assessed level of pollution prevention integration into inspections and the facilities= receptiveness to receiving such information in that context. Findings included:

- , while many facility personnel indicated a willingness to attend pollution prevention workshops, few had attended any. **Willingness to attend** may not be an effective predictor of actual attendance;
- , facilities expressed interest in receiving pollution prevention information from inspectors;
- , facilities most commonly expressed interest in strategies related to the replacement of solvents with aqueous cleaners; and
- , more respondents perceived the possible regulatory compliance benefits than potential cost benefits of pollution prevention.

Project starting date: June 1, 1997

Ending date: October 31, 1998

Primary funding source: DTSC

Amount: \$45,000

Contact person: Kathy Barwick

Guidance for Water-Based Solvents in Auto Repair and Maintenance Cleaning Facilities

DTSC, in partnership with the Santa Barbara Air Pollution Control District and the Pollution Prevention Center, prepared guidance for auto repair shop owners on what to look for and ask about before purchasing aqueous-based cleaning systems. A separate report provided a framework to both vendors and suppliers of aqueous-based cleaning units, with suggestions on what to include in promotional sales literature.

Project starting date: June 1, 1997

Ending date: October 31, 1998

Primary funding source: DTSC

Amount: \$30,000

Contact person: Robert Ludwig

Substitutes for Brake Cleaning: Minimizing Human Health and Environmental Consequences

This project, conducted by the New Partnership Foundation (NPF), focused on testing and demonstrating water-based brake cleaning alternatives to replace perchloroethylene (PERC) aerosol cleaners. The Institute for Research and Technical Assistance tested water-based cleaners in seven facilities to determine the technical feasibility and cost of replacing PERC with these cleaners. The water-based cleaners selected for testing did not contain solvent additives or other toxic components. At the conclusion of the project, NPF will prepare and distribute a pamphlet and seven fact sheets, written in English and Spanish, for the Latino community. Project partners include DTSC, the South Coast Air Quality Management District, the City of Los Angeles Bureau of Sanitation, the Institute for Research and Technical Assistance, and the Los Angeles County Sanitation Districts.

Project starting date: October 1997

Ending date: March 2000

Primary funding source: U.S. EPA Environmental Justice Pollution Prevention Grant Program, on behalf of the Latino community

Amount: \$96,000

Contact person: Robert Ludwig

Aqueous Cleaning Case Studies Project

DTSC, in partnership with Southern California Edison (SCE) and the Institute for Research and Technical Assistance, assisted businesses in converting to water-based systems for parts cleaning. Case studies were prepared comparing the performance and cost of the solvent and water-based systems. Assistance recipients acted as showcases to other companies that perform

similar operations. This project also included two other elements: a vendors=workshop (held in April 1998), and two seminar/exhibition fairs (held July 1998 and December 1998).

Project starting date: December 1997

Ending date: December 1998

Primary funding source: Southern California Edison Amount: \$ 50,000

Contact person: Robert Ludwig

Assisting Furniture Strippers in Reducing Health Risks from Methylene Chloride Stripping Formulations, An Alternative to Methylene Chloride

This project focuses on evaluating the alternatives to methylene chloride in the furniture stripping industry. The most promising alternatives will be identified and tested in selected facilities. The feasibility of the alternatives will be documented, along with a discussion of economic, health and safety, and environmental tradeoffs. Project partners include DTSC, the National Institute of Occupational Safety and Health, the South Coast Air Quality Management District, the Los Angeles County Sanitation Districts, Southern California Edison, the Institute for Research and Technical Assistance, and selected furniture stripping businesses in the Los Angeles area.

Project starting date: July 1, 1998

Ending date: April 1, 2000

Primary funding source: National Institute for Occupational Health and Safety and the South Coast Air Quality Management District.

Amount: \$41,000

Contact person: Robert Ludwig

Cleaner Technologies Substitutes Assessment: Adhesives Use in the Furniture Industry

This project will develop and implement a Cleaner Technologies Substitutes Assessment for adhesives in the furniture and related industries. The purpose of the Cleaner Technologies Substitutes Assessment is to provide firms in the Los Angeles area, particularly small and medium-sized businesses, with information on different types of adhesives. The objective is to provide the information that will enable these businesses can make informed choices based on performance, cost, and overall protection of human health and the environment.

Various types of adhesives will be compared and assessed, including methylene chloride-based, flammable solvent-based, water-based, hot-melt, and high solids adhesives. Project partners include DTSC, the California Air Resources Board, the San Francisco Bay Area Air Quality Management District, U.S. EPA Region IX, the South Coast Air Quality Management District, the Institute for Research and Technical Assistance, the Los Angeles County Sanitation Districts,

Southern California Edison, the Adhesives and Sealant Council, the International Sleep Products Association, and the Association of Woodworking and Furniture Suppliers.

Project starting date: July 1, 1998

Ending date: July 1, 2000

Primary funding source: U.S. EPA

Amount: \$ 200,000

Contact person: Robert Ludwig

Building Maintenance Products Pollution Prevention Project

This joint project was initiated to evaluate and encourage the use of environmentally-preferred chemicals for building maintenance activities, including janitorial work. The key pollution prevention approaches evaluated were: 1) chemical substitutions, 2) chemical use reduction, and 3) monitoring chemical use. The project is complete and the final report has been prepared. The California Department of General Services has agreed to evaluate many of the safer chemicals suggested from this research, and will offer feedback to DTSC. Project partners included DTSC, Santa Clara County and U.S. EPA Region IX.

Project starting date: November 1998

Ending date: January 2000

Primary funding source: U.S. EPA, PPIS Grant to DTSC

Amount: \$113,300

Contact person: Arvind Shah; Kim Wilhelm

Mercury Reduction for Hospitals and Medical Facilities

DTSC has contracted with the Department of Health Services (DHS) to conduct mercury assessments at six San Francisco Bay area hospitals, and identify substitutes for mercury-containing devices. DHS will develop mercury assessment documents specific to California regulations, and create a "How to" guide for medical facilities on mercury source reduction. Statewide training and workshops on mercury elimination will also be held. This project works in conjunction with a U.S. EPA PPIS grant to DHS for the reduction of plastics and dioxin use.

Project starting date: September 1, 1999

Ending date: June 30, 2000

Primary funding source: DTSC

Amount: \$99,617

Contact person: Mary Pride

Batch-Loaded Cold Cleaning Conversion in Southern California: A Small Business Technical Assistance Program

DTSC has contracted with the Institute for Research and Technical Assistance to provide technical assistance to small and medium-sized firms in selecting and adopting suitable alternatives in batch-loaded cold cleaning applications. The evaluated alternatives will be water-based cleaners, with a concurrent goal of ensuring that cross-media problems from the conversions are minimized. Project partners include U.S. EPA, the Los Angeles County Sanitation Districts, and the Orange County Sanitation District (funding provided by these partners totals: \$47,000).

Project starting date: October 1, 1999

Ending date: October 1, 2001

Primary funding source: DTSC

Amount: \$20,000

Contact person: Robert Ludwig

- ◆ Issue: DTSC's over-reliance on federal grants for research and local government support limits its effectiveness.

California's regulatory structure relies heavily on the existence of local-level regulatory programs, particularly with respect to regulating medium and small-sized enterprises. In the hazardous waste regulatory area, hazardous waste generators are regulated by the Certified Unified Program Agencies (CUPAs)²⁵. Because of this division of responsibilities, DTSC has placed considerable emphasis on building and maintaining local-level pollution prevention programs.

In 1986, DTSC funded what was perhaps the first local-level pollution prevention program in the nation. The County of Ventura demonstrated that when provided with pollution prevention information during routine inspections, hazardous waste-generating facilities respond with significant (ranging from 25 to 75 percent) reductions in waste generation. Recognizing the effectiveness of the Ventura program, as well as the vital role of local governments for reaching hazardous waste generators, the legislature passed AB 4294 in 1993, which specifically directed up to \$250,000 annually from the technology demonstration program funds for local government pollution prevention programs. Due to funding constraints, however, DTSC has funded local programs inconsistently. At this time, funds for local programs are generally only available through federal grant programs.

²⁵Most fully-permitted facilities (i.e., hazardous waste treatment, storage, or disposal) are regulated directly by DTSC.

Federal grants

Pollution Prevention Incentives for States

The U.S. EPA provides limited grant funding to states for pollution prevention. DTSC has consistently applied for PPIS funds; of course not all applications are funded. DTSC generally uses PPIS grant funds for support to local governments, and for specific research projects.

Problems associated with over-reliance on federal grant funds

There are at least three reasons why DTSC sees its current reliance on federal funds for local government p2 program support as problematic:

Federal grant funds are costly for DTSC. Costs are incurred in the application process and in contract administration and development. Furthermore, most grants require a significant match share (for PPIS funds, 50%). DTSC usually Apays@for the match requirement out of staff time. Over time, DTSC staff resources become fully committed to these matching requirements, limiting DTSC's ability to seek additional federal funds.

Federal grant funds are inconsistent and unreliable. DTSC cannot control or predict federal pollution prevention funding priorities from year to year. Furthermore, California's needs and priorities may differ significantly from those established at the federal level.

Chapter 7

Pollution Prevention Advisory Committee

Recommendations and Issues for Further Discussion

SB 1916²⁶ charges the Pollution Prevention Advisory Committee with “making recommendations to the department concerning program activities and funding priorities, and legislative changes, if needed.” This chapter lists the recommendations the Advisory Committee wishes to make at this time.

Additional recommendations may emerge from future deliberations of the committee. At the end of this chapter, we have listed a number of topics of interest to the committee. We expect that several will be selected for discussion over the next year.

Finally, the Advisory Committee has requested that DTSC or Cal/EPA provide bi-annual status updates to the Advisory Committee on the implementation of these recommendations.

These recommendations are from the public members of the Advisory Committee. Cal/EPA *ex officio* representatives did not state any official agency or administration position on these recommendations. They did, however, provide valuable input on all the topics discussed, to help the public members more carefully craft the recommendations.

Advisory Committee Recommendations

1. The Advisory Committee recommends that DTSC focus on the vehicle service and repair industry for its small business program for fiscal years 00/01 and 01/02, and concurs with the approach defined in this report.
2. The Advisory Committee recommends that DTSC focus on the petroleum refining industry for its large business program for fiscal years 00/01 and 01/02, and concurs with the approach defined in this report.
3. The Advisory Committee recommends that DTSC involve employees and/or their unions, public health advocates, and public health agencies, as well as environmental advocacy and industry groups, in developing and implementing its pollution prevention program.
4. The Advisory Committee recommends that DTSC improve its hazardous waste data to allow for more accurate targeting and pollution prevention progress assessment.
5. The Advisory Committee recommends that the Department of Pesticide Regulation participate in the SB 1916 process by providing a representative to the Pollution Prevention Advisory Committee.
6. The Advisory Committee supports providing funding to local government pollution prevention programs.

²⁶ Health and Safety Code section 25244.14(e)(3)

7. The Advisory Committee recommends that the DTSC's pollution prevention program target industries and substances that may cause environmental or human health problems, rather than solely focusing on hazardous waste generation.
8. The Advisory Committee recommends that the DTSC's pollution prevention program achieve measurable environmental benefits.
9. The Advisory Committee recommends that all state agencies prepare and implement pollution prevention plans.
10. The Advisory committee recommends that Cal/EPA establish an agency-level pollution prevention program.

Potential Topics for Future Pollution Prevention Advisory Committee Discussions

The following list of topics will be considered by the Advisory Committee for its next year of work. (These topics will be grouped to reduce overlap.)

Focus on reducing chemical use, not just hazardous waste

Precautionary Principle²⁷

Pesticide use

Consumer responsibility (guilt)

P2 and consumer products

Manufacturers' responsibility for life cycle—take back

Product ban authority for DTSC/water board

Household, schools p2

P2 in local hazardous waste regulatory agencies

Comprehensive materials exchange

Multimedia p2 at agency level

Local government p2 plans

EMS systems

Green Business program—expand

Media campaign like non-smoking campaign

²⁷ The following statement, endorsing the Precautionary Principle, was drafted and finalized at a conference at the Wingspread Conference Center, Racine, Wisconsin, and signed by 32 scientists, environmentalists, and researchers:

"... Where an activity raises threats of harm to the environment or human health, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically. In this context the proponent of an activity, rather than the public, bears the burden of proof. The process of applying the Precautionary Principle must be open, informed and democratic, and must include potentially affected parties. It must also involve an examination of the full range of alternatives, including no action."

Enhance integration of local p2—inspection opportunities
PBTs (persistent, bioaccumulative, and toxic)
How to expand reach to others to help do the work
Focus on pollutant of concern
Focus p2 in communities with disproportionate share of environmental costs (“environmental equity”)
Agribusiness and p2
Adopt-a-state park program (litter)

P2 in hazardous waste generator training requirements

Connection between p2 and sustainability
The Natural Step (as a framework for sustainability)
Measurement of environmental benefits
Matrix on measurability of p2
Manufacturers’ responsibility for product liability per European Union model

Out-of-state exports analysis
Economic benefits of p2 to business and the public
Mandatory vs voluntary
Fees and impact on waste generated
Analysis of recycled materials; analyze what it takes to run a recycling facility; recycled oil

Funding in general
Funding p2 through enforcement penalties
\$10 million allocation
Grant program for pollution prevention

Long term role of SB 1916 AC
Early work on industry candidates for next round
Progress reports (agency to AC)
Time limits on recommendations, targets

Value of voluntary program²⁸
New CA hazardous waste source reduction goal²⁹

²⁸ SB 1916 requires the DTSC to determine whether it would be effective and feasible to establish a "low-cost voluntary pollution prevention program".

²⁹ Health & Safety Code section 25244.15 requires DTSC to establish a new source reduction goal for California. DTSC wishes to receive advice from the Advisory Committee on how to establish this goal.

Appendix 1
Advisory Committee Meeting Minutes

**Department of Toxic Substances Control (DTSC)
Office of Pollution Prevention and Technology Development (OPPTD)
Pollution Prevention Advisory Committee Minutes
October 6, 1999
Sacramento Convention Center**

Attendance:

Advisory committee members

Public members:

Barbara Brenner, Breast Cancer Action
Greg Beach, San Bernardino Fire Dept./CalCUPA Forum
Kelly Moran, Sierra Club
Maggie Robbins, California Federation of Labor
Jim Schrack, ARCO
Ann Heil, Los Angeles County Sanitation Districts
Stewart Crook, Agilent Technologies, Inc.
Brian Cox, Humboldt County Environmental Health
Larry Moore, Larry's AutoWorks
Martha Valdes, Environmental Health Coalition

Cal/EPA boards, departments and offices (*ex officio* representatives):

Bill Orr, Integrated Waste Management Board
Don Ames, Air Resources Board
Jim Bennett, state Water Resources Control Board
David Siegel, Office of Environmental Health Hazard Assessment
Bob Hoffman, Department of Toxic Substances Control
B.B. Blevins, Cal/EPA Office of the Secretary

DTSC staff

Kathy Barwick, Senior Hazardous Substance Scientist
Kim Wilhelm, Chief, Pollution Prevention Branch
David Hartley, Chief, Pollution Prevention Clearinghouse
Alan Ingham, Chief, Source Reduction Unit
Jim Allen, Chief, Office of Pollution Prevention and Technology Development

Observers

Andrea Lewis, Cal/EPA
Eileen Sheehan, U.S. EPA Region IX Pollution Prevention Team

I. The meeting was called to order by Laurie McCann, the advisory committee facilitator. All present introduced themselves and expressed their expectations about the committee. Some of the expectations:

--high expectations of the group
--want to see DTSC benefit from diverse input

- don't forget "environmental justice" issues
- cross-media issues important
- importance of pollution prevention in regulatory process--need to pass information to local agencies
- look at specific pollutants
- importance of making the best use of our time (meeting time is limited)
- open, honest process
- look at pollutants rather than industry types
- this group will get things done--high confidence in the group
- energize DTSC's p2 program
- opportunity to identify ideas for Cal/EPA secretary and legislature
- multimedia, multijurisdictional issues
- accomplish measurable things
- occupational health consequences of p2
- Precautionary Principle

II. Edwin F. Lowry, DTSC Director, gave opening remarks. The ensuing discussion focused on the need to make p2 activities within Cal/EPA multimedia.

III. Review agenda/ground rules

The committee reviewed and approved the agenda and the ground rules.

The committee discussed the roles and responsibilities of the facilitator (Laurie), DTSC staff (Kathy), the elected committee chairperson, and DTSC staff.

Action: Kathy to distribute phone list to committee for contacts

IV. Review "Project Road Map"

The graphic "Project Road Map" was discussed in order to focus on and come to agreement on the goals of the advisory committee for the first year. It was agreed that the goals of the committee are to provide recommendations on the 2-year workplan; to evaluate DTSC's p2 program, and to make recommendations about priorities, program activities, and legislation.

Challenges:

- distinguishing self from constituents
- trouble with jargon/acronyms
- diversity of interests
- narrow vs. broad--how to balance?
- timing (legislative schedule)
- relevance to other Cal/EPA boards/depts/offices
- maintaining continuity and interest between meetings
- constraints from committee members' agencies re: participant resources
- national implications. What we do in California may have a ripple effect nationally.
- legislative agenda overtake committee work?

Success factors:

- do-able, clear objectives between meetings
- legislative interest
- balance between environmental benefits and benefits to industry

Other comments:

- hazardous waste source reduction planning requirements now include the "Summary Progress Report"; the data collected here may reveal need for legislation to force more p2 implementation
- data are insufficient; TRI doesn't give the full picture
- include worker issues; include occupational health branch of DHS; CalOSHA

Action: Kathy to provide glossary, organizational chart for Cal/EPA

V. Kim Wilhelm presented an overview of DTSC's current pollution prevention activities.

Discussion points:

- SB 1916 activities resources/activities meant to be integrated into overall pollution prevention program--not separate
- how is U.S. EPA expending its p2 resources?
- p2 in the south San Francisco Bay potw programs a success story

VI. Kathy Barwick gave a presentation about some of the different criteria the committee may want to use to make decisions on how to focus the p2 program. Included in the presentation were quantitative and qualitative considerations such as technical/economic feasibility, hazardous waste/TRI data, pollutants/chemicals of concern, OPPTD staff expertise, environmental justice, and other possible criteria.

VII. Dan Garza gave an overview of the various data bases available to DTSC, including the manifest data, the Biennial Report System, and the Toxics Release Inventory (TRI). Of particular note are the limitations of the data. For example, manifest data do not include Standard Industrial Classification (SIC Codes) information, making it difficult to establish waste trends relative to specific industry types. Another example is the issues of combinations of chemicals; manifest data contain no information about combinations of chemicals. Another limitation resides within the TRI data base: it generally only identifies releases from companies using large amounts of hazardous materials. Cumulative releases from numerous small point sources are not identifiable through this data set.

Discussion points:

- TRI outdated (air data); don't have the speciation you need
- what's missing?
 - use data
 - milk run information
- some states have performed useful analyses of TRI data
- DTSC shouldn't feel confined by the 3 data sets presented
- concern: how confident are we that the data reveal true problems?

- manifest data are relatively accurate
- need to retain this issue when formulating legislative recommendations (i.e., what data do we need?)

VII. The Big Picture--Discussion

Trends

Positive

- state doing well economically
- more funding available
- SB 709 (water bill)--grants authority for agencies to require p2 planning for chronic water quality violators
- the water program's Total Maximum Daily Load requirements stimulating p2
- communities demanding change

Negative

- general fund--there's a reluctance to spend general fund \$ on the environment by the legislature
- "greenwashing"

Other

- point vs nonpoint sources
 - stormwater
 - agricultural runoff
 - personal behavior
- nonpoint sources require p2 solutions, more awareness
- difficulty re: translating data to risk
- multilateral trade agreements
- cross-border issues

Technology issues

- products, chemicals being developed quickly--environmental effects not known
- lower detection limits
- better understanding of health effects

Political/Government issues

- OSHA doesn't require proof of safety before use
- increased population
- cultural differences

Community needs:

good, safe jobs; clean water; health; safety; level playing field; consistency; holistic approach; safe food; healthy ecosystems; self-reliance; clean air; sustainability; flexibility; socially responsible business/industry; certainty; right-to-know; information on choices; equitable environmental burdens

How to relate the big picture to the task at hand? Ideas:

- need to focus on nonpoint sources
- how can p2 efforts be focused on environmental justice issues
- target communities where impacts are heavier
- outreach re: other cultures
- cultivate responsible companies
- many factors exist beyond DTSC program; picking targets not as critical; but p2 must exist over time (must start somewhere)
- start with the chemical, work back to facilities
- identify possible alternatives
- look at what's working and do more of that
- putting more people to work on the problem (incentives: Green Business Program)
- how do we change the culture?
- need more information on what is successful
- get businesses here to talk about how they make improvements
- we're interested in environmental problems--not just reducing hazardous waste
- OPPTD should make recommendations based on its knowledge
- OPPTD should draft criteria, and a list of known environmental problems
- OPPTD conduct preliminary data analysis, get info from other states
- apply 3 data sets (manifest, TRI, BRS) to comprehensive list
- be clear re: limitations of the data
- staff needs input from group: 3 highest priorities re: chem/compounds
- what motivates company behavior?
- BDOs--bring top 5-6 issues/problems
- what communities are most affected? Is there a geographic overlay we could bring to the analysis?

VIII. Committee Business

The committee elected Kelly Moran as chair, and Stewart Crook as co-chair.

IX. Parking lot (save for future discussion)

What data do we need in order to better target the program, measure success, etc?

X. Next meetings

Future meeting dates for the advisory committee were set. They are:

December 1, 1999

February 2, 2000

April 5, 2000

Specific locations TBA.

The date of the public meeting to share the draft 2-year workplan has not yet been scheduled.

X. DTSC staff assignments

The advisory committee expressed its desire for DTSC pollution prevention staff to evaluate hazardous waste and other appropriate data and present analyses and recommendations to the committee at the next meeting. This work is currently underway.

**Department Of Toxic Substance Control
Pollution Prevention Advisory Committee
December 1, 1999, Meeting Notes**

The Department of Toxic Substances Control's Pollution Prevention Advisory Committee met in Sacramento on December 1, 1999 to continue its work on helping DTSC select targets for its pollution prevention program.

ATTENDANCE

Public members:

Barbara Brenner, Breast Cancer Action
Greg Beach, San Bernardino County Fire Dept./CalCUPA Forum
Kelly Moran, Sierra Club
Maggie Robbins, California Federation of Labor
Jim Schrack, ARCO
Ann Heil, Los Angeles County Sanitation Districts
Stewart Crook, Agilent Technologies, Inc.
Brian Cox, Humboldt County Environmental Health
Larry Moore, Larry's AutoWorks
Martha Valdes, Environmental Health Coalition

Cal/EPA boards, departments and offices (*ex officio* representatives):

Bill Orr, Integrated Waste Management Board
Don Ames, Air Resources Board
Jim Bennett, state Water Resources Control Board
Jim Donald, Office of Environmental Health Hazard Assessment
Bob Hoffman, Cal/EPA Office of the Secretary; Department of Toxic Substances Control

****It was noted that until DTSC Director Edwin F. Lowry appoints a new representative to this committee, Bob Hoffman will be representing both DTSC and the Cal/EPA Office of the Secretary.**

DTSC staff

Kim Wilhelm, Chief, Pollution Prevention Branch
David Hartley, Chief, Pollution Prevention Clearinghouse
Alan Ingham, Chief, Source Reduction Unit
Jim Allen, Chief, Office of Pollution Prevention and Technology Development
Kathy Barwick, Senior Hazardous Substance Scientist
David Miller, Senior Hazardous Substance Scientist
Maxine Richey, Senior Hazardous Substance Scientist
Ann Blake, Senior Hazardous Substance Scientist
Evelina Rayas, Senior Hazardous Substance Scientist
Robert Ludwig, Hazardous Substance Scientist

Daniel Garza, Hazardous Substance Engineer
Kim Smith, OPPTD support staff

Visitors

John Katz, U.S. EPA
Robin Bedell-Waite, Contra Costa County Environmental Health
Susan Blachman, Environmental Finance Center
Sarah Diefendorf, Environmental Finance Center
Paris Greenlee, Regional Business Resource and Assistance Center

KEY OUTCOMES

- * The following desired meeting outcomes were identified during agenda review:
 - a) Agreement on criteria for selection of P2 targets
 - b) Agreement on a list of prioritized P2 targets
 - c) Ideas for building blocks for the two-year work plan
 - d) Agreement on date & tasks for the next meeting
- * Criteria for selecting P2 targets were reviewed and discussed extensively. The list of criteria proposed by DTSC staff was sorted into 1) criteria and 2) considerations. These items were further sorted into 2 lists: 1) for selection of P2 targets and 2) design of the two year work plan.
- * A presentation on hazardous waste data generated a subcommittee to further explore this topic and bring information back to the full committee. Subcommittee members include Kelly Moran, Maggie Robbins, Martha Valdes and Ann Heil. Interests expressed included:
 - a) identifying data useful for targeting
 - b) understanding how data could be useful for targeting
 - c) maintaining focus on the connection to hazardous waste
 - d) need for linking SIC Codes (Standard Industrial Classification) with manifest data
 - e) not getting lost in the data
- * A proposal for an Advisory Committee "white paper" was made and accepted. This document would be in addition to the two year DTSC work plan and would be the vehicle for tracking Advisory Committee recommendations that are outside of the immediate task of developing the 2-year p2 workplan. It will be discussed at a future meeting (or possibly between meetings).
- * A list of nine recommended P2 targets was discussed at length. The list of targets was derived from advisory committee input and DTSC research, and consists of the following: auto repair, metal finishers, the semiconductor industry, petroleum refineries,

the primary metals industry, the utility industry, Department of Defense facilities, airports and mercury.

The list was prioritized via a multi-voting dots exercise. The results were as follows:

- a) Small business: Auto Repair
- b) Industry: Petroleum Refineries. Runners-up were the semiconductor Industry, primary metals and airports.

(Mercury was not discussed; the mercury discussion will occur at the next meeting.)

- * Additional candidates for small business were named: Dry cleaners, primary metals, silver waste (photo finishers & dental labs), wood finishers, printers, dentistry, and printed circuit board mfg. **Dry cleaners** was the top vote-getter, followed by wood finishers and printers.
- * Additional candidates for large industry were named: Agribusiness, chemical mfg., rail yards, harbors, hospitals, paints & coatings, polymers & resins, and aerospace. **Chemical mfg** was the top vote-getter, followed closely by agribusiness and rail yards.
- * Additional industry candidates were assigned to DTSC for research and presentation at the next meeting.
- * Three items on the agenda were forwarded to the next meeting: *Presentation* on OPPTD Tools & Approaches, *a brainstorm* on new tools & approaches, and a *short presentation* on the interest-based approach to decision-making.
- * An email list for committee discussions has been set up by Ann Heil.

NEXT MEETING

January 4, 2000, Sacramento. 10 a.m. – 4 p.m., same location. Agenda items will include (not necessarily in this order):

- OPPTD presentation on additional industry targets, plus mercury as a possible chemical target, for the 2-year p2 workplan,
- group discussion on the possible targets,
- a short presentation on the interest-based approach to decision-making
- Advisory Committee decision on targets for DTSC workplan,
- a presentation on OPPTD tools & approaches, and
- a brainstorm on new tools & approaches.

**Department Of Toxic Substance Control
Pollution Prevention Advisory Committee
January 4, 2000 Meeting Notes**

The Department of Toxic Substances Control's Pollution Prevention Advisory Committee met in Sacramento on January 4, 2000 to continue its work on helping DTSC select targets for its pollution prevention program.

ATTENDANCE

Public members:

Barbara Brenner, Breast Cancer Action
Greg Beach, San Bernardino County Fire Dept./CalCUPA Forum

Kelly Moran, Sierra Club

Maggie Robbins, California Federation of Labor
Jim Schrack, ARCO
Ann Heil, Los Angeles County Sanitation Districts
Stewart Crook, Agilent Technologies, Inc.
Brian Cox, Humboldt County Environmental Health
Larry Moore, Larry's AutoWorks

Absent: Martha Valdes, Environmental Health Coalition

Cal/EPA boards, departments and offices (*ex officio* representatives):

Bill Orr, Integrated Waste Management Board
Don Ames, Air Resources Board
Jim Bennett, state Water Resources Control Board
Jim Donald, Office of Environmental Health Hazard Assessment
Bob Hoffman, Cal/EPA Office of the Secretary; Department of Toxic Substances Control**

**It was noted that until DTSC Director Edwin F. Lowry appoints a new representative to this committee, Bob Hoffman will be representing both DTSC and the Cal/EPA Office of the Secretary.

Facilitator

Laurie McCann, California Center for Public Dispute Resolution

DTSC staff

Kim Wilhelm, Chief, Pollution Prevention Branch
David Hartley, Chief, Pollution Prevention Clearinghouse
Alan Ingham, Chief, Source Reduction Unit
Jim Allen, Chief, Office of Pollution Prevention and Technology Development
Kathy Barwick, Senior Hazardous Substance Scientist
David Miller, Senior Hazardous Substance Scientist

Maxine Richey, Senior Hazardous Substance Scientist
Ann Blake, Senior Hazardous Substance Scientist
Evelina Rayas, Senior Hazardous Substance Scientist
Pat Lopez, OPPTD support staff

Visitors

Renee Lawver, Integrated Waste Management Board

KEY OUTCOMES

* The following desired meeting outcomes were identified during agenda review:

- a) Agreement on a list of prioritized P2 targets
- b) Ideas for building blocks for the two-year work plan
- c) Agreement on date & tasks for the next meeting

* DTSC presented information on six additional proposed p2 targets for consideration. In the small business category, information on print shops, wood finishers, and dry cleaners was presented. In the large business category, information was presented on the chemical manufacturing industry, agribusiness, and railyards. Additional information was presented on the petroleum refining industry and the semiconductor industry. DTSC's recommendations for p2 targeting were as follows: for a large business category, the petroleum, semiconductor, or a subgroup of the chemical manufacturers. For the small business category, auto repair, printing, or wood finishing.

* A brief overview of interest-based decision-making was provided to help the committee with making targeting decisions.

* The list of proposed targets was discussed at length and was prioritized via a voting dots exercise. The results were as follows:

Small business: Auto Repair

Large business: tie between Petroleum Refineries and Agribusiness

There was extended discussion about the potential for success in the agribusiness area, due largely to DTSC's lack of authority and expertise in this area. DTSC proposed that the "large business" concentration focus on the petroleum refineries, and that it address, within the 2-year workplan, the agribusiness industry as feasible (e.g., review source reduction plans for chemical manufacturers, including pesticide formulators, if they are indeed subject to SB 14).

* DTSC presented information on current pollution prevention efforts and activities. The committee "brainstormed" ideas for the targeted industry categories to assist DTSC in crafting more specific project activities.

- * The committee expressed concern about the lack of specific and consistent representation from DTSC executive staff, and requested that DTSC staff convey this concern to Ed Lowry, DTSC director.
- * The committee also expressed concern about a recent DTSC decision to refrain from providing grants to local programs as part of its small business p2 program effort. A subcommittee was formed to discuss the issue further.
- * The committee expressed concern with DTSC's level of effort to assure that generators met the requirement to submit Summary Progress Reports under the Hazardous Waste Source Reduction and Management Review Act (SB 14).

I. NEXT MEETING

February 23, 2000, Sacramento. Specific location TBA. Proposed agenda items include:

- OPPTD presentation on draft workplan
- Workplan discussion
- Data review
- Discussion of "bigger picture" issues, possible legislative recommendations

If you have any questions about DTSC's pollution prevention program, or the Pollution Prevention Advisory Committee, contact Kathy Barwick of DTSC's Office of Pollution Prevention and Technology Development at (916) 323-9560, or by e-mail at kbarwick@dtsc.ca.gov.

**Department Of Toxic Substance Control
Pollution Prevention Advisory Committee
February 23, 2000 Meeting Notes**

The Department of Toxic Substances Control's Pollution Prevention Advisory Committee met in Sacramento on February 23, 2000. The purpose of this meeting was to get agreement on the general approach of DTSC's pollution prevention report, get agreement on DTSC's general approach for the two-year workplan for petroleum refineries and auto repair industries, compile a short list of possible recommendations for Chapter 7 of report, and outline the Acritical path@ for successful closure of year one.

ATTENDANCE

Public members:

Barbara Brenner, Breast Cancer Action
Greg Beach, San Bernardino County Fire Dept./CalCUPA Forum
Kelly Moran, Sierra Club
Maggie Robbins, California Federation of Labor
Jim Schrack, ARCO
Ann Heil, Los Angeles County Sanitation Districts
Stewart Crook, Agilent Technologies, Inc.
Brian Cox, Humboldt County Environmental Health
Larry Moore, Larry's AutoWorks
Martha Valdés, Environmental Health Coalition

Cal/EPA boards, departments and offices (*ex officio* representatives):

Bill Orr, Integrated Waste Management Board
Don Ames, Air Resources Board
Jim Bennett, state Water Resources Control Board
Jim Donald, Office of Environmental Health Hazard Assessment
Bob Hoffman, Cal/EPA Office of the Secretary; Department of Toxic Substances Control (*Bob clarified that he represents both Winston Hickox, Cal/EPA Secretary, and Ed Lowry, DTSC Director, on this committee)

Facilitator

Laurie McCann, California Center for Public Dispute Resolution

DTSC staff

Kim Wilhelm, Chief, Pollution Prevention Branch
David Hartley, Chief, Pollution Prevention Clearinghouse
Alan Ingham, Chief, Source Reduction Unit
Jim Allen, Chief, Office of Pollution Prevention and Technology Development
Kathy Barwick, Senior Hazardous Substance Scientist
David Miller, Senior Hazardous Substance Scientist
Maxine Richey, Senior Hazardous Substance Scientist

Ann Blake, Senior Hazardous Substance Scientist
Evelina Rayas, Senior Hazardous Substance Scientist
Natalie Marcanio, Hazardous Substance Scientist
Nicole Mendez, OPPTD support staff

Visitors

Robin Bedell-Waite, Contra Costa County Environmental Health
Susan Blachman, Environmental Finance Center, Reg. IX
Sarah Diefendorf, Environmental Finance Center, Reg. IX
Simeon ?, Air Resources Board
Leif Magnuson, U.S. EPA Reg. IX
Matt McCarron, North Bay Permit Assistance Center

KEY OUTCOMES

- * Key outcomes of the meeting include (more details below):
 - May 31, 2000 was selected as the date of the public meeting of the Advisory Committee
 - the Data Subcommittee will meet via conference call on Thursday, March 2 at 1 pm.
 - DTSC staff will schedule a conference call of the Grants Subcommittee
 - comments on the proposed project activities for petroleum refineries and auto repair were provided to DTSC staff (more details below)
- * Kathy Barwick presented an overview of the draft report/workplan.
- * Alan Ingham presented a description of the draft petroleum refineries workplan. The committee expressed some concern about the timing of the various project elements, and about the relative weight of various project elements. Specifically, the committee was concerned about the fundamental premise that posting facility environmental profiles on the internet would in itself cause the petroleum refining industry to aggressively pursue source reduction. Highlights of committee suggestions:
 - start working with industry, labor, and affected community organizations now (prior to workplan finalization), so they have input into project design
 - avoid a one size fits all approach--what works best in specific situations?
 - implement project elements concurrently, rather than sequentially
 - de-emphasize data evaluation
 - emphasize onsite work with refinery personnel
- * DTSC presented a description of the draft auto repair industry workplan. The committee expressed support for the general concept of a plan to plan, including proceeding with a needs assessment to help focus DTSC's efforts in this very broad area (>30,000 facilities!). DTSC staff clarified that this project will exclude auto body repair shops and radiator shops.
- * General committee feedback (for both projects):

--the plan should contain a clear description of the steps DTSC will follow (e.g., meet w/stakeholders, formulate goals, establish specific project activities, etc.)
--goals should be clearly articulated, and measurable
--the plan should contain a rough timeline for activities

- * A date was established for the public meeting of the advisory committee: May 31, 2000. Remaining issues include identifying the meeting location, determining specific objectives for the meeting, etc.
- * The committee discussed the issue of how it will make recommendations to DTSC. DTSC staff will gather appropriate items from previous meetings and offline discussions to provide a focus for discussing possible recommendations at the April 5th meeting.
- * The committee identified critical steps toward meeting our deadline of having a final report/workplan by June 15, 2000 (closure for year one of the committee's work):

1. Data Subcommittee

In order to follow up on the previous meeting of the Data Subcommittee, focusing on the committee's request for specific data, a Data Subcommittee conference call has been scheduled for Thursday, March 2, 2000 at 1 pm. Call details will be sent out via email. Agenda items include:

- a) review status of subcommittee data analysis request
- b) review Chapter 2 of the draft p2 report
- c) discuss future needs re: hazardous waste data, including the need for California to establish a new reduction goal

Subcommittee members include Maggie, Kelly, Ann, Barbara, and Dan Garza (DTSC staff).

2. General concurrence on the report/workplan prior to 5/1/00.

--Comments on the portions of the draft report not discussed during this meeting, including chapters 2, 3, 5 and 6 should be provided to Kathy by March 13, 2000.

Comments may be submitted by phone, mail, e-mail, or you may simply mark up your copy and send it to Kathy at P.O. Box 806, Sacramento, CA 95812-0806.

--The next iteration of the report/workplan will be distributed via e-mail for committee review; a conference call will be scheduled for those interested in discussing the report/workplan.

3. AC members were requested to provide to DTSC any specific information re: groups to meet with, etc., to fill out the ~~A~~plan to plan@ for the automotive repair and petroleum refining projects. Provide input to Dave Hartley [(916) 324-1815, or dhartley@dtsc.ca.gov for auto repair project] or Alan Ingham [(916) 322-5629, or aingham@dtsc.ca.gov for petroleum refineries project).

4. Resolve recommendations issue.

Action: Kathy will collect identified issues from previous meetings and offline discussions of the committee for consideration as a starting point for the April 5th meeting.

NEXT MEETING

April 5, 2000, Sacramento. Specific location TBA. Proposed agenda items include:

- review next report/workplan draft
- review issues/recommendations
- further discussion on the AC's public meeting (5/31/00)

SCHEDULE FOR REMAINDER OF YEAR

- ! April 5, 2000 - Next meeting
- ! May 1, 2000 - Draft report/workplan due
- ! May 6, 2000 - Accessible to public
- ! May 31, 2000 - Public meeting
- ! June 15, 2000 - Final report

Questions about DTSC's pollution prevention program, or the Pollution Prevention Advisory Committee should be directed to Kathy Barwick of DTSC's Office of Pollution Prevention and Technology Development at (916) 323-9560, or by e-mail at kbarwick@dtsc.ca.gov.

Pollution Prevention Advisory Committee
DRAFT MEETING SUMMARY
April 5, 2000
Sacramento Convention Center

AC Members Attending: Kelly Moran, Larry Moore, Barbara Brenner, Maggie Robbins, Jim Schrack, Brian Cox, Ann Heil, Greg Beach; Bob Hoffman, Bob Borzelleri, Jim Bennett, Don Ames, Jim Donald. Missing: Stewart Crook, Martha Valdes

DTSC staff: Jim Allen, Alan Ingham, Kim Wilhelm, Dave Hartley, Ann Blake, Evelina Rayas, David Miller, Maxine Richey, Kathy Barwick

Proposed outcomes of meeting

Agreement on two year work plans
Agreement on revisions to Report
Agreement on recommendations (Chapter 8)
Decision on public meeting(s)

- I. Check In
- II. Agenda Review
- III. Overview of Draft Report (revised)
- IV. Auto Repair P2 “Plan to Plan”
Petroleum Refineries P2 “ Plan to Plan”
- V. Financial Incentives

Lunch - A Shot of Class ~ K Street Mall at 11th Street, across from the Cathedral.

Recommendations - Chapter Eight of the Report

AC Recommendations to DTSC

AC Recommendations for Cal/EPA

Issues for discussion in Years Two & Three

VII. Review and affirm over all approach of Report

Public Meeting (s): date, design, location, schedule

Role of Advisory Committee in Years Two and Three

Project Evaluation – How Are We Doing?

XI. Check Out

Check In and Agenda Review

No elephants, no major revisions to agenda in the morning. In the afternoon the process for reviewing and revising recommendations (Chapter 8) was adjusted to accommodate Committee suggestions.

Overview of Draft Report

Presented by Kathy Barwick. No substantive suggestions or changes.

Auto Repair / Small Business “Plan to Plan”

Presented by Dave Hartley

Alignment

Useful coincidence with other efforts
Not reinventing the wheel
Good plan
Responsive to AC comments
Using the industry to find out what works
Emphasis on outreach
Emphasis on assessment
Transferability to other industries
Working w/Shasta College

Suggested Enhancements

Refine goal setting / targeting section of work plan
Time frames
Emphasis on site
Partnerships with chains, dealers
Involve “neighbors,” technicians and employees
Involve local P2 groups
Evaluate the alternatives
Union apprentice schools
Hands-on demonstrations
Emphasize benefits to employees *and* environment
Ensure validity of materials for California and local agencies
Keep eye on the ball > “Improve the environment”
Look for new partners (e.g., SBDC’s)
Integration/oversight re: coverage of various programs
Measure results over time
Local govt working w/auto repair = leverage
Explore permit authority for P2
Make sure you reach the middle tier
Cal/CUPA forum
Involve state fleets – get GSA on board
Involve distributors of retail auto products
Earth 911
BAR – active involvement
Web development
Other state agency efforts (coordinate with?)

Concerns and Questions

Overwhelming – too many/ too small to deal with effectively?
Regional tailoring a must
How to market program to those who need it the most

Work with local government
Can't do on-site – too many facilities
SB 14 call in – not first
Make sure the language used/level of materials is appropriate for the audience
Take a “strategic planning” approach
Don't redesign existing materials if they work
How to best leverage the “30 K factor”?
Who's in the industry – how find the “small guys/street mechanics”?
Need to establish a methodology for measurement/cause and effect

Petroleum Industry “Plan to Plan”

Presented by Alan Ingham

Alignment

Like approach – extend to others in industry
Know of similar efforts before that were successful
Responsive to AC
Genuine voluntary program
Strategy makes sense

Suggested Enhancements

Clarify role of the community
Emphasize economic benefits to refineries
Measure success of community involvement
Be aggressive in identifying source reduction targets
Develop strategy for non-participating refineries – “challenge may not be enough to get all the key players involved
Clarify/specify how worker health and safety will benefit from this initiative
Encourage those with compliance problems to get involved
Transferability
Goal is environmental improvement – emphasize
Need meaningful commitments
Target capital investment plans
Involve communities at disposal sites (e.g., Buttonwillow)
Invite communities to help set priorities
Prepare a schedule with target dates and specific goals
Project should end with evaluation, not implementation
Maximize opportunities for synergy (Merit Partnership)
PBT's
Make it a pilot project – simplify

Questions and Concerns

Each company facility is different
Sheer magnitude of the problem

Comparing facilities is difficult

Rising gas prices – will effective source reduction cause further acceleration?

Not sure community involvement is essential to success of the project

What would a facility commitment to source reduction look like?

Voluntary vs. mandatory source reduction

Meaningful public participation a challenge – community credibility issue

Schedule for May-August

May 1:	Draft to AC/DTSC Management for Review
May 8:	Comments due
May 16:	Report posted on the WWW
May 31:	First public meeting (May 31)
June 9:	Second public meeting (June 9)
June 16:	End public comments
June 23:	Final draft to Cal/EPA
July 1:	Begin implementation
July 28:	Agency sign-off
Aug 28:	Governor's sign-off (anticipated)

Agenda for Public Meeting/Berkeley - May 31 [in no particular order]

Schedule for Year Two (July 1 2000- June 30 2001)

Focus for Year Two

Joint - DTSC and SB1916 - presentation of Draft Report (including Recommendations)

General Discussion

Invite public comments

Recommendations (Chapter 8)

This part of the meeting discussion is not included here, due to the numerous changes that have been made since the meeting.

Agenda for Public Meeting/Los Angeles – June 9

Joint - DTSC and Advisory Committee - presentation of draft report (including recommendations)

General discussion

Offer comments from May 31 meeting

Invite additional public comments

DTSC / SB 1916
Pollution Prevention Advisory Committee
SUMMARY OF PUBLIC MEETINGS (Draft)
9: 30 a.m. – 12: 30 p.m. May 31, 2000
DTSC Office, 700 Heinz Way, Berkeley

5/31/00 Advisory Committee members attending: Kelly Moran, Larry Moore, Barbara Brenner, Jim Schrack, Ann Heil, Greg Beach; Bob Hoffman, Bill Orr, Bob Borzelleri, Jim Bennett, Don Ames. Not present: Stewart Crook, Maggie Robbins, Martha Valdes, Bob Hoffman, Brian Cox, Jim Donald.

DTSC staff: Kim Wilhelm, Jim Allen, David Hartley, Alan Ingham, Kathy Barwick, Maxine Richey, Marcia Murphy, Natalie Marcanio, Tyrone Smith

Proposed outcomes of this meeting:

- ◆ Public understanding of the SB1916 Draft Final Report
- ◆ Meaningful interaction and effective information exchange between the Advisory Committee, DTSC staff, and the public.
- ◆ A record of public comments on the SB1916 Draft Final Report

Agenda

- I. Welcome
- II. Facilitator, Committee Members and DTSC staff self-introduce
- III. Agenda Review & Process Overview
- IV. Overview of Draft Report
- V. Public Comments
- VI. Dialogue with DTSC Staff and Advisory
- VII. Thank you & Receive Evaluation Forms

Summary of Public Comments 5/31/00

Comments were received from:

Ms. Robin Bedell-Waite, Contra Costa County
Mr. Leif Magnuson, U.S. EPA Region IX
Dr. Henry Clark, West Contra Costa ???
Mr. Michael Kent, Contra Costa Health Services
Mr. Gary Nolan, Santa Clara County pollution Prevention Program

Other observers:

Jo Haegert Greene, Contra Costa Hazardous Materials Program
Raul E. Cisneros, California Air Resources Board
Susan Blachman, Reg. IX Environmental Finance Center

Comments received at this meeting generally supported the approach outlined in the DTSC's proposed workplans for the petroleum refining and auto repair industries. Commentors stressed

the need to work at the local level, with community involvement and input. Commentors also stressed the importance of consumer education and information, as well as the ultimate effect consumer demand and purchasing choices have on waste and pollution generation. Commentors also stressed the need to work on a multimedia basis, despite the fact that the DTSC is a single-medium (hazardous waste) regulatory agency.

Commentors stressed the importance of establishing partnerships. Finally, multiple comments were received regarding awards programs. Commentors suggested that DTSC refrain from establishing new awards programs, and focus instead on supporting existing local-level recognition programs, or establishing new ones where they don't currently exist.

5/31 Public Meeting Flip Chart Transcriptions

5/31 Transcript of public meeting flip chart notes

- * Re AC recommendations # 7 & 10, "be bold!". Promote multimedia p2
 - consistent message
 - stronger partnerships among state agencies
 - diminishing returns—need compliance
- * awards programs: do they work?
- * measuring hazardous waste reduction
 - locals unable to do well
 - waste reduction tracking system
 - # of bays
 - \$ savings
- * DTSC—need to enable/encourage CUPAs to give P2 recommendations
 - require p2 training
 - businesses
 - CUPA staff
 - DTSC statement clarifying authority
- * minimize time spent on awards programs
 - piggyback on other (local) programs
 - build local programs
- * more publicity/education for consumers
- * increase focus on consumers
 - education
 - challenging
 - sound bites
- * don't build new awards program
- * p2 a good thing but how will information get out to the community?
 - make this report more accessible to folks w/o computer access
 - connect with people who are concerned/directly affected
- * work with community councils (West Contra Costa County Toxics Coalition)
- * themes for success
 1. industry-specific
 2. local works best—local regulations are so specific

3. multimedia—how a shop looks at their own operations
 4. compliance AND p2 together
 5. consolidate/leverage agency resources
 6. provide simple, accurate, up to date information
 7. positive interactions between agencies and business—build relationships/dialogue
 8. adequate incentives
 9. achieve real results
- general comment: two years is not much time to get results
- * community involvement—Contra Costa County invites cooperative outreach

Auto Repair

- * Bureau of Auto Repair—develop a relationship
- * AFE training
 - p2 philosophy
 - specific techniques
- * (+) work w/state on fleet management
- * small brochure—switch to non-chlorinated solvents
- * vendor lists on website
- * existing vendor lists old, out of date
- * focus on partnerships good
 - state agencies
 - multimedia focus
- * add partnerships with educational opportunities, auto repair technical training facilities—the future is there
- * delivery element—local delivery—state provide resources, shops relate to local
 - regulatory agencies
 - nonregulatory agencies
- * consumer education is key, large challenge
- * brief history:
 - Reg IX partners
 - lots of good work done
 - Clean Bay Program
 - Recognition
 - BMPs
 - Green Business Program
 - Interagency
 - Multimedia
 - Reg IX auto repair materials
- Provide focus
 - Goal 1: enlist, empower local agencies
 - local meetings, explore multi-agency assistance programs (locals can reach all the auto repair facilities)
 - materials
 - local case studies
 - compliance checklists

- identify barriers, opportunities
 - models for outreach
 - local agency commitment to contribute to project
- Goal 2: technical training
 - year 1—not a big need
 - year 2—may need technician training
- Goal 3: build p2 into state rules (sea change)
- Goal 4: up-to-date materials
- * Bureau of Automotive Repair
- * work with existing urban runoff agencies
- * content exists
 - revise
 - translate into “sound bites”
- * explore different delivery mechanisms, not just brochures
 - email systems of companies
- * Green Business—consumers, providers
- * don’t duplicate awards programs
- * create local awards programs where need exists, and build on experience
 - criteria
 - use expertise of others

Petroleum Refineries

- * Merit Partnership (Reg IX)
 - didn’t result in much?
 - regulatory interaction
- * people want to be safe from accidents, releases
 - concerned about air pollution, water pollution
- * encourage multimedia approach
- * incorporate p2 into regulatory programs
- * community safety—CalARP overlaps p2 (risk management program)
- * work with locals re: outreach to communities

DTSC / SB 1916 Advisory Committee
Pollution Prevention Advisory Committee
SUMMARY OF WORKING MEETING

1:30 – 4:45 p.m. May 31, 2000

Cal/EPA/DTSC Office, 700 Heinz Way, Berkeley

AC Members attending: Kelly Moran, Larry Moore, Barbara Brenner, Jim Schrack, Ann Heil, Greg Beach; Bob Hoffman, Bob Borzelleri, Jim Bennett, Don Ames. Not present: Stewart Crook, Maggie Robbins, Martha Valdes, Bob Hoffman, Brian Cox, Jim Donald.

DTSC staff: Kim Wilhelm, Jim Allen, David Hartley, Alan Ingham, Kathy Barwick, Maxine Richey, Marcia Murphy, Natalie Marcanio, Tyrone Smith

Proposed outcomes of this meeting:

- ◆ Agreement on recommendations for inclusion in SB 1916 Draft Final Report
- ◆ Understand priorities for discussion topics for Year Two
- ◆ Set meeting schedule for Year Two

- I. Review and Reflect on Public Comments
- II. Recommendations for the Draft Final Report
- III. Future Topics for AC Discussions
- IV. Meeting Dates for Year Two

Summary of Advisory Committee Reflections on 5/31 Public Comments

General

- ◆ going in right direction
- ◆ build support for local p2 NGOs/groups
- ◆ p2 is a “niche”—need to mainstream

Multimedia p2 vs. single-medium haz waste source reduction

- ◆ concern—releases
- ◆ DTSC—only hazardous waste?
- ◆ water, air releases are of real concern
- ◆ be bold—multimedia

Data

- ◆ need visible results to local folks as well as p2 professionals
- ◆ data useful
- ◆ data profiles—yes!

Attendance

- ◆ who was here/who was not here (to provide comments)

- ◆ low risk/low problem
- ◆ not a crisis/problem
- ◆ not on the radar

Other

- ◆ EMS/ISO (Cal/EPA) activity and p2—what is the relationship? Should be more co-operative/co-effort
- ◆ uncertainty re: value of EMS

Recommendations for Draft Final Report

The Advisory Committee finished deliberations on the recommendations it wishes to make to the DTSC and Cal/EPA in the final pollution prevention report and workplan. They are as follows:

1. The Advisory Committee recommends that DTSC focus on the vehicle service and repair industry for its small business program for fiscal years 00/01 and 01/02, and concurs with the approach defined in this report.
2. The Advisory Committee recommends that DTSC focus on the petroleum refining industry for its large business program for fiscal years 00/01 and 01/02, and concurs with the approach defined in this report.
3. The Advisory Committee recommends that DTSC involve employees and/or their unions, public health advocates, and public health agencies, as well as environmental advocacy and industry groups, in developing and implementing its pollution prevention program.
4. The Advisory Committee recommends that DTSC improve its hazardous waste data to allow for more accurate targeting and pollution prevention progress assessment.
5. The Advisory Committee recommends that the Department of Pesticide Regulation participate in the SB 1916 process by providing a representative to the Pollution Prevention Advisory Committee.
6. The Advisory Committee supports providing funding to local government pollution prevention programs.
7. The Advisory Committee recommends that the DTSC's pollution prevention program target industries and substances that may cause environmental or human health problems, rather than solely focusing on hazardous waste generation.
8. The Advisory Committee recommends that the DTSC's pollution prevention program achieve measurable environmental benefits.
9. The Advisory Committee recommends that all state agencies prepare and implement pollution prevention plans.

10. The Advisory committee recommends that Cal/EPA establish an agency-level pollution prevention program.

Potential Topics for Year Two of Pollution Prevention Advisory Committee Discussions

The following list of topics will be considered by the Advisory Committee for its next year of work. (These topics will be grouped to reduce overlap.)

Focus on reducing chemical use, not just hazardous waste

Precautionary principle

Pesticide use

Consumer responsibility (guilt)

P2 and consumer products

Manufacturers' responsibility for life cycle—take back

Product ban authority for DTSC/water board

Household, schools p2

P2 in local hazardous waste regulatory agencies

Comprehensive materials exchange

Multimedia p2 at agency level

Local government p2 plans

EMS systems

Green Business program—expand

Media campaign like non-smoking campaign

Enhance integration of local p2—inspection opportunities

PBTs (persistent, bioaccumulative, and toxic)

How to expand reach to others to help do the work

Focus on pollutant of concern

Focus p2 in communities with disproportionate share of environmental costs (“environmental equity”)

Agribusiness and p2

Adopt-a-state park program (litter)

P2 in generator training requirements

Connection between p2 and sustainability

The Natural Step

Measurement of environmental benefits

Matrix on measurability of p2

Manufacturers' responsibility for product liability per European Union model

Out-of-state exports analysis

Economic benefits of p2 to business and the public

Mandatory vs voluntary

Fees and impact on waste generated

Analysis of recycled materials; analyze what it takes to run a recycling facility; recycled oil

Funding in general

Funding p2 through enforcement penalties

\$10 million allocation

If no \$10 million—grants for p2?

Long term role of SB 1916 AC

Early work on industry candidates for next round

Progress reports (agency to AC)

Time limits on recommendations, targets

Value of voluntary program

New CA hazardous waste source reduction goal

Next SB1916 Advisory Committee Meeting: August 3 (possibly in Berkeley)

DTSC / SB 1916
Pollution Prevention Advisory Committee
SUMMARY OF PUBLIC MEETING
9: 30 a.m. – 12: 30 p.m. June 9, 2000
Carson Community Center, Carson CA

AC Members Attending: Kelly Moran, Maggie Robbins, Jim Schrack, Ann Heil, Greg Beach, Stewart Crook, Bill Orr, Bob Borzelleri, Jim Bennett. Not present: Don Ames, Martha Valdes, Barbara Brenner, Bob Hoffman, Brian Cox, Jim Donald. Facilitator: Laurie McCann.

DTSC staff: Kim Wilhelm, Alan Ingham, David Hartley, Kathy Barwick, Evelina Rayas, Steve Lavinger.

Proposed outcomes of this meeting:

- ◆ Public understanding of the SB1916 Draft Final Report
- ◆ Meaningful interaction and effective information exchange between the Advisory Committee, DTSC staff, and the public.
- ◆ A record of public comments on the SB1916 Draft Final Report

Agenda

- I. Welcome
- II. Facilitator, Committee Members and DTSC staff self-introduce
- III. Agenda Review & Process Overview
- IV. Overview of Draft Report
- V. Public Comments
- VI. Dialogue with DTSC Staff and Advisory
- VII. Thank you & Receive Evaluation Forms

Comments were received from:

Marshall Waller, Tosco Refining Co
Carmen L. Piro, Long Beach CUPA
Eugene Becker, Global Sulfur
Kathryn Gleeson, Paramount Petroleum

Comments and questions

- ◆ Regulations are good if a) applied consistently and b) provided an even playing field
- ◆ Yorktown project (reference...?)
- ◆ What tools will be used to ensure implementation?
- ◆ Can/how can this program better support the role of inspectors? To help them “get out the P2 word.”

Petroleum refineries

- ◆ Low hanging fruit has been picked
- ◆ Is management level of petroleum industry aware of SB 1916 process?
- ◆ The number of fully integrated refineries is about 15
- ◆ How can we mainstream P2 efforts?
- ◆ Important to emphasize that participation in SB 1916 activity is **a voluntary effort**
- ◆ Provides good opportunity for inspectors to convey P2 info – a good complement to their on-going efforts
- ◆ How could locals best work with DTSC? To assist industry by providing a) direct and easy access to centralized information about P2 and b) make sure info provided is timely – late or out of date is not good!
- ◆ Delayed response to requests for help from OSHA is also a problem.

Auto repair

- ◆ What is role of inspectors in this process? Role is a) to suggest and recommend improvements for P2 and b) identify possible problems and provide information, help research the problem.
- ◆ This program will work closely with inspectors (CUPAs, local gov't).
- ◆ Concern expressed: even good recommendations are not always followed.
- ◆ DTSC offers a 1-800 number for immediate assistance (retired engineers)
- ◆ What per cent of recycled oil is re-refined and used as motor oil? Guess is that it is low – marketing is a big challenge, need to develop a market for re-cycled oil.
- ◆ “Re-refined” terminology is marketing challenge
- ◆ Cheaper to burn it?
- ◆ Clean up existing P2 data and make it more useful
- ◆ Coordinate with downtown L.A. training facility/community college
- ◆ In California, estimate that 50-60% of generators are auto repair related.
- ◆ Good data supports effective P2 – what is relationship between numbers and per cent?
- ◆ Is used oil the largest source?
- ◆ How many auto repair facilities fall under SB 14? Unregistered facilities are a problem.
- ◆ This P2 work plan does not include auto body shops – different classes of pollutants and issues.

Reflections of Advisory Committee

- ◆ Important to note that the P2 work plan for petroleum refineries is not exclusive of smaller operations (50K barrels/_____?)
- ◆ It's time to get out the word to our own companies – emphasize the voluntary approach of this program.
- ◆ Technology is changing – creating new opps. For P2
- ◆ Need to **integrate** regulatory mode and proactive P2 efforts.

- ◆ “Low hanging fruit” argument not always applicable – the Dow projected discovered another layer of opportunities.
- ◆ Need to follow up on question/problem of recycled oil.
- ◆ Need to follow up on number of generators.
- ◆ Need to know more about out of state exports – what firms are receiving exports?

After lunch, this meeting was followed by a tour of the BP Amoco (former ARCO) facility south of Carson, hosted by SB 1916 Advisory Committee member Jim Schrack.

Meeting summary prepared by Laurie McCann and reviewed by Kathy Barwick.

Appendix 2: California Waste Codes

California Nonrestricted Wastes

Inorganics

- 121. Alkaline solution (pH > or = 12.5) with metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, or zinc)
- 122. Alkaline solution without metals (pH > or = 12.5)
- 123. Unspecified alkaline solution
- 131. Aqueous solution (2 < pH < 12.5) containing reactive anions (azide, bromate, chlorate, cyanide, fluoride, hypochlorite, nitrite, perchlorate, and sulfide anions)
- 132. Aqueous solution with metals (< restricted levels and see 121)
- 133. Aqueous solution with total organic residues 10 percent or more
- 134. Aqueous solution with total organic residues less than 10 percent
- 135. Unspecified aqueous solution
- 141. Off-specification, aged, or surplus inorganics
- 151. Asbestos-containing waste
- 161. FCC waste
- 162. Other spent catalyst
- 171. Metal sludge (see 121)
- 172. Metal dust (see 121) and machining waste
- 181. Other inorganic solid waste

Organics

- 211. Halogenated solvents (chloroform, methyl chloride, perchloroethylene, etc.)
- 212. Oxygenated solvents (acetone, butanol, ethyl acetate, etc.)
- 213. Hydrocarbon solvents (benzene, hexane, Stoddard, etc.)
- 214. Unspecified solvent mixture
- 221. Waste oil and mixed oil
- 222. Oil/water separation sludge
- 223. Unspecified oil-containing waste
- 231. Pesticide rinse water
- 232. Pesticides and other waste associated with pesticide production
- 241. Tank bottom waste
- 251. Still bottoms with halogenated organics
- 252. Other still bottom waste
- 261. Polychlorinated biphenyls and material containing PCBs
- 271. Organic monomer waste (includes unreacted resins)
- 272. Polymeric resin waste
- 281. Adhesives
- 291. Latex waste
- 311. Pharmaceutical waste
- 321. Sewage sludge
- 322. Biological waste other than sewage sludge
- 331. Off-specification, aged, or surplus organics
- 341. Organic liquids (nonsolvents with halogens)
- 342. Organic liquids with metals (see 121)
- 343. Unspecified organic liquid mixture
- 351. Organic solids with halogens
- 352. Other organic solids

Solids

- 411. Alum and gypsum sludge
- 421. Lime sludge
- 431. Phosphate sludge
- 441. Sulfur sludge
- 451. Degreasing sludge
- 461. Paint sludge
- 471. Paper sludge/pulp
- 481. Tetraethyl lead sludge
- 491. Unspecified sludge waste

Miscellaneous

- 511. Empty pesticide containers 30 gallons or more
- 512. Other empty containers 30 gallons or more
- 513. Empty containers less than 30 gallons
- 521. Drilling mud
- 531. Chemical toilet waste
- 541. Photochemicals/photoprocessing waste
- 551. Laboratory waste chemicals
- 561. Detergent and soap
- 571. Fly ash, bottom ash, and retort ash
- 581. Gas scrubber waste
- 591. Baghouse waste
- 611. Contaminated soil from site clean-ups
- 612. Household wastes
- 613. Auto-shredder waste

California Restricted Wastes

- 711. Liquids with cyanides > or = 1000 Mg/L
- 721. Liquids with arsenic > or = 500 Mg/L
- 722. Liquids with cadmium > or = 100 Mg/L
- 723. Liquids with chromium(VI) > or = 500 Mg/L
- 724. Liquids with lead > or = 500 Mg/L
- 725. Liquids with mercury > or = 20 Mg/L
- 726. Liquids with nickel > or = 134 Mg/L
- 727. Liquids with selenium > or = 100 Mg/L
- 728. Liquids with thallium > or = 130 Mg/L
- 731. Liquids with polychlorinated biphenyls > or = 50 Mg/L
- 741. Liquids with halogenated organic compounds > or = 1000 Mg/L
- 751. Solids or sludges with halogenated organic compounds > or = 1000 mg/Kg
- 791. Liquids with pH < or = 2
- 792. Liquids with pH < or = 2 with metals
- 801. Waste potentially containing dioxins

Appendix 3: California Hazardous Waste Manifest Information Data Limitations

The data within the manifest system come from information entered on manifests by hazardous waste generators. Manifests must be completed by generators of hazardous waste shipping hazardous waste offsite for management or disposal. Manifests contain information on the generator, transporter, and treatment facility, as well as information on the type of waste (identified by California Waste Code) the quantity of waste, and how it was managed (treated, recycled, or disposed).

Six manifest copies are created when hazardous waste is shipped. Copies of the manifest are retained by the generator, transporter, and disposal facility; one copy is returned to the generator by the disposal facility to confirm receipt of the waste. One copy must be submitted to DTSC by the generator, and one by the disposal facility within 30 days of the waste shipment date. This "cradle to grave" system ensures that the wastes arrive at the destination the generator intended, and is designed to track the movement and ultimate disposition of hazardous waste. DTSC enters data from all manifest copies received into an automated data system known as Haznet. Approximately 1 million manifest documents are processed each year, representing 500,000 shipments a year.

Manifest Data Limitations

In general, manifest data should be used with the knowledge that they have been entered directly from manifests, without any correction. Specific data limitations likely to affect the analysis in this report include:

Invalid dates:

Manifests containing invalid shipment or receipt dates are shown as a Azero@year. Queries for a specific date range should also be checked for activity for a year equal to zero to account for data that may have had an invalid date entry.

Invalid waste code or disposal method:

Invalid waste codes or disposal methods are replaced with "***" in the system, rendering such data irretrievable due to invalid values in these fields.

Invalid waste quantity:

When manifest data are entered into Haznet, all quantities are converted to tons as a standard unit of measure. Cubic yards are converted using a weight to volume estimate for soil³⁰; liquid measurements are converted assuming a density equivalent to water. Conversions that would result in greater than 131 tons for a single manifest (the largest allowed by federal law and significantly larger than most conveyances) are not processed and are flagged as errors, with the tons shown in Haznet as equal to zero. This prevents major skewing of the data by very large

³⁰except asbestos, which is tracked using a separate density.

loads appearing in the data in error. Invalid units of measure are also flagged as errors, with tons shown as equal to zero.

Duplicate manifests and invalid matches:

Data used in the reports are based upon data from the A disposal@copy of the manifest or the A generator@copy in cases where no disposal copy exists. Copies are matched, and in rare instances, an alteration of the content of the disposal copy can result in the lack of a matched manifest set. This results in the extraction of data from both generator and disposal copies, leading to double counting. Matching manifest copies also ensures that duplicate manifest numbers (printed in error) are not processed together.

Inconsistent application of California Waste Codes:

The generator enters the California Waste Code (CWC) most applicable to the wastes being shipped. The information contained on the manifest is therefore limited by the amount of experience or knowledge the user has about the California Waste Code system. The California Waste Code system is very general in its description of the wastes. Two different people can potentially classify the same waste stream as two different waste codes. This can lead to misinterpreting trends, as the same waste stream may be classified under several different waste codes over time.

There is also no hierarchy inherent in the waste codes. This means that a waste stream can be described by more than one code, which also may lead to inconsistent application of codes over time. For example, a waste stream may contain both substances X and Y. There is no standard way of selecting CWC X or Y--yet the generator must choose one or the other. Inconsistent classification by generators, over time, can result in inconsistent data.

Waste codes also do not allow for differentiating waste streams which may contain 100% of a hazardous constituent versus those that may contain only 10% of the constituent. Other material within the waste stream, such as soil, water or nonhazardous waste is also counted in the total amount (by weight) of the waste being reported on the manifest.

No SIC Codes on manifests

Interpreting manifest data is rendered difficult due to the inconsistent inclusion of SIC Codes in the system. This makes it difficult to ascertain which industry types, rather than individual facilities, are generating more or less waste.

Out of state waste shipments

Haznet cannot track CWCs for wastes shipped out of state.

Potential for double counting

The potential for double-counting waste exists when evaluating manifest data. For this analysis, we have attempted to minimize this error by excluding waste data from treatment, storage and disposal (TSD) facilities, whose wastes are largely derived from offsite wastes.

Milk run manifests

Small businesses generating a consistent type of waste, for instance, solvent waste, often contract with a waste management company to routinely pick up the waste for recycling, treatment, or disposal. Most often, these smaller quantities are hauled under what is known as a milk run manifest. The hauler of these wastes, consolidated from many smaller companies, is identified on the manifest as the generator. Therefore, the wastes generated by many small companies are not visible as such in the system.

Data not present due to errors:

While most errors are due to incorrect entries on the manifest itself, data entry errors can also occur. This primarily causes problems when retrieving data for a specific handler. Errors of this sort will have little effect on the validity of the analyses performed for this report.

Timeliness of data:

Data are available in the system typically within three months of shipment of waste.

Appendix 4: TRI Reporting Categories

Air Releases

Total releases to air include all TRI chemicals emitted by a plant from both its stack(s) as well "fugitive" sources (such as leaking valves).

Stack Air Releases

Releases to air occur through confined air streams such as stacks, vents, ducts or pipes. These are also called point source releases.

Fugitive Air Releases

This category includes releases to air that do not occur through a confined air stream, including equipment leaks, evaporative losses from surface impoundments and spills, and releases from building ventilation systems. These releases are also called releases from non-point sources.

Water Releases

Releases to water include discharges to streams, rivers, lakes, oceans and other bodies of water (but not ground water). This includes releases from both point sources, such as industrial discharge pipes, and non-point sources, such as stormwater runoff, but not releases to sewers or other off-site wastewater treatment facilities.

Land Releases

Land releases include all the chemicals disposed on land within the boundaries of the reporting facility, and can include any of the following types of on-site disposal:

RCRA Subtitle C Landfills

This category includes wastes buried on-site in landfills regulated by RCRA Subtitle C.

Other On-site Landfills

This category includes wastes buried on-site in landfills that are not regulated by RCRA.

Land Treatment/Application Farming

This category includes wastes that are applied or incorporated into soil.

Surface Impoundments

Surface impoundments are uncovered holding ponds used to volatilize (evaporate wastes into the surrounding atmosphere) or settle waste materials.

Other Land Disposal

This category includes other forms of land disposal, including accidental spills or leaks.

Underground Injection

Underground injection releases fluids into a subsurface well for the purpose of waste disposal. Wastes containing TRI chemicals are injected into either Class I wells or Class V wells.

Other Injection Wells include Class II, III, and IV wells.

Class I Injection Wells are industrial, municipal, and manufacturing wells injecting liquid wastes into deep, confined, and isolated formations below potable water supplies.

Class II oil- and gas-related wells re-injection of produced fluids for disposal, enhanced recovery of oil, or hydrocarbon storage.

Class III wells are associated with the solution mining of minerals.

Class IV wells include the injection of hazardous or radioactive fluids directly or indirectly into underground sources of drinking water (USDW), only if the injection is part of an authorized CERCLA/RCRA clean-up operation.

Class V wells are generally used to inject non-hazardous wastes into or above an underground source of drinking water. Class V wells include all types of injection wells that do not fall under I-IV. They are generally shallow drainage wells, such as floor drains connected to dry wells or drain fields.

Offsite Transfers

TRI also tracks off-site transfers to various types of facilities such as Publicly Owned Treatment Works (municipal sewage treatment plants), treatment and disposal facilities, as well as recycling and energy recovery facilities.

Publicly Owned Treatment Works (POTW)

A POTW is a wastewater treatment facility that is owned by a state or municipality. Wastewaters from facilities reporting under TRI are transferred through pipes or sewers to a POTW. Some chemicals, such as metals, may be removed, but are not destroyed and may be disposed of in landfills or discharged to receiving waters; transfers of metals and metal compounds to POTWs are categorized as off-site releases.

Treatment and Disposal

Toxic chemicals in wastes that are transferred off-site may be treated through a variety of methods, including biological treatment, neutralization, incineration, and physical separation. These methods typically result in varying degrees of destruction of the toxic chemicals. Toxic chemicals in wastes that are transferred off-site for disposal generally are released to land at an off-site facility or are injected underground.

Recycling and Energy Recovery

Toxic chemicals in wastes sent off-site for the purposes of recycling are generally recovered by a variety of recycling methods, including solvent recovery and metals recovery. Toxic chemicals in wastes sent off-site for purposes of energy recovery are combusted off-site in industrial furnaces (including kilns) or boilers that generate heat or energy for use at that location. Both of these management methods (recycling and energy recovery) are considered to be recycling within the TRI data system. Incineration is not considered to be energy recovery and is therefore not included within the recycling category.

Appendix 5: Wastes Excluded from Hazardous Waste Designation Between 1993 and 1998

RCRA WASTE STREAMS:

debris 261.3, 40 CFR
recovered oil from petroleum refining, exploration and production 261.4(a)(12)
excluded scrap metal 261.4 (a)(13)
shredded circuit boards (14)
condensates from kraft mill steam strippers (15)
secondary materials from the primary mineral processing industry (16)
used oil refining distillation bottoms 261.4(b)(14)
residues of waste in empty containers 261.7(a)(1)
universal wastes (batteries, pesticides, mercury thermostats, HH and conditionally exempt small qty generator waste) 261.9
residues derived from the burning or processing of hazardous waste in an industrial furnace 266.112
military munitions 266.202

NON RCRA WASTE STREAMS:

intermediate manufacturing process streams 25124(c)(1)
acetic acid 25145(b)(2)(B)(i)
aluminum chloride (ii)
ammonium bromide (iii)
ammonium sulfate
anisole
boric acid
calcium fluoride
calcium formate
calcium propionate
cesium chloride
magnesium chloride
potassium chloride
sodium bicarbonate
sodium borate decahydrate
sodium carbonate
sodium chloride
sodium iodide
sodium tetraborate
oils commonly used as food flavorings (xix)
wastes exceeding a TTLC 25141.5(b)(3)(A) and (B)
wastes from the extraction, beneficiation, and processing of ores and minerals 25143.1(b)(1)
treated wood waste 25143.1.5
cementitious material 25143.8(a)
debris contaminated with petroleum 25143.12
wastes containing silver 25143.13
dry cell batteries 25216
human surgery specimens or tissue 117635 Health and Safety Code
pharmaceuticals 11747 Health and Safety Code
pulping liquors 66261.4(a)(4)
secondary materials (a)(5)
infectious wastes (b)(1)
used oil re-refining distillation bottoms (b)(3)
used chlorofluorocarbon refrigerants (b)(4)

Appendix 6: Application of the Targeting Considerations to DTSC's Selected Industry Targets

Table 25: Application of Targeting Considerations to Petroleum Refineries

Criteria		Evaluation
1. Connection to hazardous waste		There is a clear connection to hazardous waste, since refineries are a major source of hazardous waste generation.
2. Waste quantities		CWC 221 (waste oil/mixed oil) remains the single largest category of hazardous waste manifested in California (545,000 tons in 1998). Additionally, the Toxics Release Inventory places the Petroleum and Coal products industry (SIC code 29) as second in terms of total discharges, with petroleum refiners comprising 9 of the top 33 facilities producing hazardous waste in the state for 1998.
3. Coincidence with regulatory, other agency efforts		Petroleum refineries are of interest to air, water, hazardous waste and worker safety agencies. Of these, refineries are of particular interest to air quality agencies and DTSC. Refineries are a major source of air emissions and are also a very large hazardous waste generator (Also see Criterion 2). Clearly, the petroleum industry has a multi-media regulatory interest in California. Additionally, the recent accidents/releases at refineries in California have sparked a renewed interest in maintaining an enforcement presence at these facilities, increasing industry motivation to reduce waste and pollutants. These incidents have also created a focus on worker health and safety issues at California refineries.
4. Risk		The petroleum industry contributes to both cancer and non-cancer risk, based on a review of the EDF Scorecard's 1997 information on the top cancer and non-cancer risk compounds. Interestingly, although small in quantity when compared with total gasoline production, some grades of aviation gasoline are still produced that contain tetraethyl lead.
5. Likelihood of success		Since the petroleum industry is a major hazardous waste generator, the potential for reductions due to pollution prevention activities is also be large.
	a. Technical feasibility	There are a number of hazardous constituents contained within refinery wastes. When combined with the sheer volumes generated, there is the potential for reducing the large quantities of generated waste. From 1991-94, SB 14 documents reflected a 32% hazardous waste generation reduction by the petroleum industry. The 1995 SB 14 review projected that the industry can reduce its nonaqueous hazardous waste by more than 30% by implementing pollution prevention measures over the next several years.
	b. Economic feasibility	?
	c. Industry interest	The industry has demonstrated a willingness to reduce hazardous waste in the documents prepared for the previous two planning cycles of DTSC's hazardous waste source reduction planning program. The industry appears to be receptive and sensitive to the economic and social benefits of source reduction.
	d. Labor interest	<i>Assume high due to recent accidents?</i>
6. Geographic concentration of releases		According to TRI (EDF,) most of California's major refinery capacity is located in Contra Costa, Los Angeles and Kern counties. Most of these facilities were sited prior to World War II. Surrounding development is generally mixtures of industrial with some lower income residential areas. Petroleum refineries have been a focus of community concern, including environmental justice issues. The recent accidents have further sensitized these interests.
		Staff petroleum industry technical expertise exists within OPPTD. Further, as a result of past

7. OPPTD technical expertise	hazardous waste planning program, OPPTD has established contacts within the petroleum industry associations and at many major refineries.
8. Measurable result	The petroleum industry source reduction plan reviews have indicated that it is possible to measure the reduction of waste due to implemented pollution prevention projects on specific refinery unit processes.
9. Relationship to Abigger picture@	A petroleum refinery target would be of interest to air, water and hazardous waste programs. This would involve not only Cal/EPA, but could also involve local air quality management districts.
10. Flexibility	Since the sources of refinery waste are very specific, a refinery target would have limited flexibility. Projects would be coordinated with the industry associations and specific refineries. From the technical perspective, however, California refineries present a wide variety of representative unit refining processes for source reduction study.

Table 26: Application of Targeting Considerations to the Auto Repair Industry

Criterion		Evaluation
1. Connection to hazardous waste		There is a solid connection between auto repair shop activities and hazardous waste generation. Especially with petroleum wastes, solvents, antifreeze, contaminated water, and oil/solvent contaminated rags and absorbents which are managed as either a hazardous or special waste in California
2. Waste quantities		Local auto repair shops generally qualify as small quantity generators, However, in the aggregate, and especially if government agencies and large fleet maintenance activities are included, the industry can be considered a large generator of hazardous wastes throughout the state.
3. Coincidence with regulatory, other agency efforts		Waste streams generated by auto repair activities come under the scrutiny of several state and local regulatory agencies. These agencies include local air quality management districts, the California Integrated Waste Management Board, the State Water Resources Board and local CUPAs. In addition, U.S. EPA Region IX p2 staff have developed auto repair p2 workshops that have been well-received.
4. Risk		Typical waste streams generated by auto repair activities include used oils, waste fuels, solvents, paints, brake shoes/dust, and oily sludge and liquids from vehicle washing. These materials can pose cancer and toxicity risks from asbestos, lead, and chlorinated solvent exposures. Environmental impacts include risk for ozone-depleting compounds (ODC) releases to air from solvent and painting operations, and ground and surface water contamination from storage of petroleum, solvents and contaminated water sources.
5. Likelihood of success		
	a. Technical feasibility	There is a high likelihood of success for the auto repair industry. There are numerous P2 alternatives and BMPs (best management practices) available and under development by government and industry. These methods are designed to address environmental issues associated with the wide range of auto repair activities, from small repair shops to large fleet and government activities.
	b. Economic feasibility	The cost/benefits are high for auto repair shops. Most waste streams can be easily minimized either by material substitution, recycling, or utilization of established BMPS. Most source reduction methods produce economic benefits with less than a two-year payback on the initial capital investments.

	c. Industry interest	?
	d. Labor interest	?
6. Geographic concentration of releases	The largest concentrations of releases occur in urban areas because motor vehicle operations are concentration there. Auto repair shops are present in rural and agricultural areas but to a much lesser degree.	
7. OPPTD technical expertise	OPPTD currently has personnel on board who have several years of experience working in various aspects of the industry.	
8. Measurable result	Auto repair shop p2 projects could be measured by identifying waste streams that are eliminated by businesses, and measuring reduction of the overall yearly waste totals at individual facilities. However, because many auto repair shops utilize solvent services and other Amilk-run@services, measuring actual wastes reduces could be problematic. Other measurement strategies, such as evaluating the number of facilities utilizing specific source reduction strategies, may be more effective for OPPTD.	
9. Relationship to Abigger picture@	Automotive repair/maintenance source reduction projects could create opportunities for CAL/EPA boards/debts and local hazardous waste and air quality agencies to coordinate goals. It would also provide opportunities to work with various local and regional nongovernmental organizations that research process-specific source reduction alternatives. In addition, because this is a highly-visible industry, widespread industry adoption of pollution prevention could raise public awareness of pollution prevention as a beneficial environmental approach.	
10. Flexibility	There is a variety of waste sources specific to auto repair. Most of these sources have numerous off-the-shelf source reduction alternatives that have been identified and proven in the field. The existence of these established alternatives would provide good flexibility for planning and targeting different approaches to changing regulatory or industry conditions. In addition, the auto repair industry could provide a wide scope of targets and projects for the agency. The auto repair/maintenance industry is comprised of small to very large (fleet/government) businesses, and is geographically well distributed throughout the state.	

Appendix 7: Chapter 3 Tables

Table 27: 1998 TRI Cyanide Releases by Industry Type

SIC	SIC Description	Total	%	Air	Surf Water	Land	POTW	Disp-Treat	Recycle
1041	Gold ores	100,925	80.7%	0	0	100,925	0	0	0
3069	Fabricated rubber products, nec	14,233	11.4%	14,233	0	0	0	0	0
1041	Gold ores	8,200	6.6%	8,200	0	0	0	0	0
3471	Plating and polishing	755	0.6%	5	0	250	250	250	0
3471	Plating and polishing	250	0.2%	0	0	0	250	0	250
3471	Plating and polishing	233	0.2%	0	0	0	160	73	2
3429	Hardware, nec	171	0.1%	95	6	0	10	60	0
3452	Bolts, nuts, rivets, and washers	41	0.0%	0	0	0	41	0	0
	Total	124,808	100%	22,533	6	101,175	711	383	252

Table 28: 1998 TRI Facility Cyanide Releases

Facility	County	Total	%	Air	Surf Water	Land	POTW	Disp-Trmt	Recycle
McLaughlin Mine	Lake	100,925	80.7%	0	0	100,925	0	0	0
Royal Floormats		14,233	11.4%	14,233	0	0	0	0	0
CR Briggs Corp.	Inyo	8,200	6.6%	8,200	0	0	0	0	0
Prime Plating, Inc.	Los Angeles	755	0.6%	5	0	250	250	250	0
Burbank Plating Service Corp.	Los Angeles	500	0.4%	0	0	0	250	0	250
Crown City Plating Co.	Los Angeles	235	0.2%	0	0	0	160	73	2
Kwikset Corp.	Orange	171	0.1%	95	6	0	10	60	0
Kaynar Technologies	Orange	41	0.0%	0	0	0	41	0	0
Total		125,060	100%						

Table 29: 1998 TRI: Lead, by Industry Type

SIC	SIC Description	TOTAL	%	Air	Water	Land	POTW	Offsite disp	Offsite recycle
3341	Secondary nonferrous metals	3,060,594	44.2%	4,897	1		101	3,055,595	121,083
4953	Refuse systems	2,367,067	34.2%	510	0	2,365,542	0	1,015	5
1099	Metal ores, nec	1,380,124	19.9%	1,599	0	1,365,855	0	12,670	33,595
3671	Electron tubes	55,056	0.8%	0	250	0	150	54,656	710,183
3269	Pottery products, nec	23,625	0.3%	5	27	0	250	23,343	0
3691	Storage batteries	18,661	0.3%	2,769	173	0	69	15,650	20,778,041
3357	Nonferrous wire drawing & insulating	6,900	0.1%	1	5			6,894	54,262
3672	Cathode ray television picture tubes	4,560	0.1%	4,500			60		114,961
2911	Petroleum refining	2,401	0.0%	52	1	0	100	2,248	249
3643	Current-carrying wiring devices	1,715	0.0%	5	5	0	5	1,700	0
2819	Industrial inorganic chemicals, nec	1,238	0.0%	310	11	0	37	880	230,000
3087	Custom compound purchased resins	994	0.0%	1	3		6	984	994
3499	Fabricated metal products, nec	91	0.0%	79	7	0	5	0	15,300
8731	Commercial physical research	23	0.0%	0	0	0	0	23	0
3812	Search and Navigation Equipment	10	0.0%	10	0	0	0	0	29,000
3679	Electronic components, nec	0		0	0	0	0	0	212,336
	Totals	6,923,059	100%	14,738	483	3,731,397	783	3,175,658	22,300,009

Table 30: 1998 TRI, Lead by Facility

Facility	County	TOTAL	%	Air	Water	Land	POTW	Offsite Disp	Offsite Recycle
Quemetco, Inc.	Los Angeles	3,000,000	42.3%	1,602	1	0	60	3,000,000	0
Chemical Waste Management, Inc.	Kings	2,000,000	28.5%	255	0	2,000,000	0	1,010	5
Molycorp, Inc.	San Bernardino	1,000,000	20.4%	1,599	0	1,000,000	0	12,670	33,595
Safety-Kleen (Buttonwillow), Inc.	Kern	443,090	6.6%	255	0	442,830	0	5	0
GNB Technologies, Inc.	Los Angeles	198,911	2.9%	3,280	0	0	41	195,590	0
Sony Electronics Inc., San Diego Manufacturing Cen	San Diego	55,056	0.8%	0	250	0	150	54,656	710,183
Duncan Enterprises	Fresno	23,625	0.3%	5	27	0	250	23,343	0
Pirelli Cables and Systems --North America	Colusa	6,299	0.1%	0	0	0	0	6,299	8,163
Delphi E - Anaheim, CA	Orange	5,616	0.1%	2,000	5	0	11	3,600	5,000,000
Trojan Battery Co.	Los Angeles	5,159	0.1%	60	98	0	1	5,000	540,000
Trojan Battery Co.	Los Angeles	4,761	0.1%	108	17	0	36	4,600	3,000,000
Toppan Electronics, Inc.	San Diego	4,505	0.1%	4,500	0	0	5	0	43,461

GNB Technologies, Inc.	Los Angeles	2,509	0.0%	271	36	0	2	2,200	7,000,000
Alflex Corp.		1,715	0.0%	5	5	0	5	1,700	0
Chevron Products Company - Richmond Refinery	Contra Costa	1,580	0.0%	21	1	0	0	1,558	129
GNB Technologies, Inc.	Los Angeles	1,238	0.0%	310	11	0	37	880	230,000
Maclin Co.	Los Angeles	994	0.0%	1	3	0	6	984	0
Tosco Refining Co., Los Angeles Refinery Wilmington	Los Angeles	804	0.0%	14	0	0	100	690	120
Essex Group, Inc.	Orange	601	0.0%	1	5	0	0	595	5,983
Teledyne Continental Motors - Battery Prods. Oper	San Bernardino	265	0.0%	5	5	0	5	250	266,500
Ramcar Batteries Inc.	Los Angeles	260	0.0%	255	0	0	5	0	268,159
Acme Packaging Corporation Bay Point	Contra Costa	91	0.0%	79	7	0	5	0	15,300
Johnson Controls Battery Group, Inc.	Orange	71	0.0%	60	7	0	4	0	4,000,000
Hadco Santa Clara, Inc.	Santa Clara	55	0.0%	0	0	0	55	0	71,500
Chevron Research Company, A Division of Chevron U.	Contra Costa	23	0.0%	0	0	0	0	23	0
Interspace/Concorde Battery Corp.	Los Angeles	20	0.0%	10	5	0	5	0	1,000,000
Equilon Enterprises, LLC; Los Angeles Refining COM		17	0.0%	17	0	0	0	0	0
ECS Refining	Santa Clara	15	0.0%	15	0	0	0	0	121,083
Channel Industries, Inc.	Santa Barbara	10	0.0%	10	0	0	0	0	29,000
Solelectron California Building 16	Alameda	0	0.0%	0	0	0	0	0	55,833
Solelectron-California, Bldg #3	Santa Clara	0	0.0%	0	0	0	0	0	41,788
BIC General Cable Industries, Inc	Fresno	0	0.0%	0	0	0	0	0	40,116
Solelectron California Building 9	Santa Clara	0	0.0%	0	0	0	0	0	32,307
Solelectron-California, Bldg #2	Santa Clara	0	0.0%	0	0	0	0	0	29,230
Solelectron-California, Bldg #7	Santa Clara	0	0.0%	0	0	0	0	0	14,208
Solelectron-California, Bldg #8	Santa Clara	0	0.0%	0	0	0	0	0	12,895
Solelectron-California, Bldg #6	Santa Clara	0	0.0%	0	0	0	0	0	12,192
Solelectron California Building 4	Santa Clara	0	0.0%	0	0	0	0	0	9,646
Solelectron-California, Bldg #1	Santa Clara	0	0.0%	0	0	0	0	0	4,237
Total		6,757,290						3,315,653	

Lead Compounds

Table 31: 1998 TRI, Lead Compounds Releases by Industry, pounds

SIC	SIC Description	Total	%	Air	Water	Land	POTW	Offsite Disposal	Offsite Recycle
3369	Nonferrous foundries, nec	880,274	53.2%	274				880,000	11,723
1041	Gold ores	439,575	26.6%	0	0	439,575	0	0	0
4953	Refuse systems	233,851	14.1%	10	0	233,838	0	3	0
3471	Plating and polishing	53,523	3.2%	0	0	0	53,523	0	53,523
3315	Steel wire and related products	39,015	2.4%	10	0	0	5	39,000	0
3312	Blast furnaces and steel mills	2,003	0.1%	632	0	0	0	1,371	535,190
3661	Telephone and telegraph apparatus	1,770	0.1%	0	0	0	0	1,770	870
3087	Custom compound purchased resins	1,620	0.1%	10	0	0	0	1,610	0
2911	Petroleum refining	1,418	0.1%	1	0	0	0	1,417	0
3089	Plastics products, nec	1,005	0.1%	0	0	0	0	1,005	16,000
3356	Nonferrous rolling and drawing, nec	505	0.0%	5	0	0	0	500	0
3479	Metal coating and allied services	120	0.0%	0	0	0	0	120	16,000
3366	Copper foundries	115	0.0%	11				104	9,327
3714	Motor vehicle parts and accessories	89	0.0%	64	6		6	19	152,224
3432	Plumbing fittings and brass goods	87	0.0%	0	3	0	15	69	2,982
3728	Aircraft equipment, nec	72	0.0%		5		2	65	72
3561	Pumps and pumping equipment	56	0.0%	56	0	0	0	0	2,937
3351	Copper rolling and drawing	37	0.0%	10	0	11	5	11	26,175
3354	Aluminum extruded products	28	0.0%	26	2	0	0	0	5,069
3691	Storage batteries	12	0.0%						1,039,685
3429	Hardware, nec	5	0.0%	0	0	0	5	0	5
3491	Industrial valves	5	0.0%	5	0	0	0	0	63,146
3672	Cathode ray television picture tubes	5	0.0%	0	0	0	5	0	4,406
3494	Valves and pipe fittings	4	0.0%	4	0	0	0	0	13,277
3341	Secondary nonferrous metals	2	0.0%	2	0	0	0	0	41,333
	Total	1,655,196		1,120	16	673,424	53,566	927,064	1,993,944

Table 32: 1998 TRI Lead Compounds Releases by Facility, pounds

Facility	County	Total	%	Air	Water	Land	POTW	Offsite Disp	Offsite recycle
P. Kay Metal Supply, Inc.	Los Angeles	880,000	53.2%	0	0	0	0	880,000	0
McLaughlin Mine	Lake	439,575	26.6%	0	0	439,575	0	0	0
Safety-Kleen (Westmoreland), Inc.	Imperial	233,851	14.1%	10	0	233,838	0	3	0
Robert Manufacturing Co.	San Bernardino	53,523	3.2%	0	0	0	53,523	0	53,523
Davis Wire Corporation	Alameda	39,015	2.4%	10	0	0	5	39,000	0
TAMCO	San Bernardino	2,003	0.1%	632	0	0	0	1,371	535,190
Qualcomm Personal Electronics	San Diego	1,770	0.1%	0	0	0	0	1,770	870
KW Plastics of California, Inc.	Kern	1,620	0.1%	10	0	0	0	1,610	0
Golden West Refining Co.	Los Angeles	1,418	0.1%	1	0	0	0	1,417	0
Raychem Corp. Main Site	San Mateo	1,005	0.1%	0	0	0	0	1,005	16,000
Kester Solder	Orange	505	0.0%	5	0	0	0	500	0
Fresno Valves & Castings, Inc.	Fresno	255	0.0%	255	0	0	0	0	0
Calwest Galvanizing Corp - Valmont Coatings	Los Angeles	120	0.0%	0	0	0	0	120	16,000
Major Brass Foundry Inc.		111	0.0%	7	0	0	0	104	0
Price Pfister Inc.	Los Angeles	87	0.0%	0	3	0	15	69	2,982
Modine Aftermarket Holdings, Inc.	Merced	80	0.0%	62	0	0	0	18	87,973
Alliedsignal Aerospace Equipment Systems	Los Angeles	72	0.0%	0	5	0	2	65	0
Weir Floway, Inc.	Fresno	56	0.0%	56	0	0	0	0	2,937
Cerro Metal Products Co.	Los Angeles	37	0.0%	10	0	11	5	11	26,175
Kaiser Aluminum & Chemical Corporation	Los Angeles	28	0.0%	26	2	0	0	0	5,069
U.S. Battery Mfg. Co.	Riverside	12	0.0%	7	0	0	5	0	973,760
Crown Brass Mfg. Co.	Los Angeles	10	0.0%	10	0	0	0	0	5
Allied-Signal Turbocharging Sys.	Los Angeles	9	0.0%	0	6	0	2	1	37,676
U.S. Radiator Corp.	Los Angeles	6	0.0%	2	0	0	4	0	9,543
Zurn Industries, Wilkins Div.	San Luis Obispo	5	0.0%	5	0	0	0	0	63,146
Herco Technology Corp.	San Diego	5	0.0%	0	0	0	5	0	4,406
Schlage Lock Co.	Santa Clara	5	0.0%	0	0	0	5	0	5
Valley Brass Inc.		5	0.0%	5	0	0	0	0	0
James Jones Co.	Los Angeles	4	0.0%	4	0	0	0	0	13,277

Western Brass Works		4	0.0%	4	0	0	0	0	10,362
Atlas Pacific Corp.	San Bernardino	2	0.0%	2	0	0	0	0	41,333
Martin Brass Foundry Inc.	Los Angeles	2	0.0%	2	0	0	0	0	9,327
Buckner		2	0.0%	2	0	0	0	0	0
Interspace/Concorde Battery Corp.	Los Angeles	0	0.0%	0	0	0	0	0	65,925
Harman Motive, Inc.	Los Angeles	0	0.0%	0	0	0	0	0	17,032
Arrowhead Brass Products, Inc.	Los Angeles	0	0.0%	0	0	0	0	0	1,356
Total		1,655,202	100%						

1,1,1-trichloroethane

Table 33: 1998 TRI: 1,1,1-TCA by Industry Type

SIC Description	TOTAL	%	Air	Water	POTW	Offsite Disp	Offsite Recycle
Refuse systems	91,044	44.4%	3,270	0	5	87,769	2,000,000
Plating and polishing	27,812	13.6%	27,812	0	0	0	2,470
Manufacturing industries, nec	25,219	12.3%	25,219	0	0	0	11,422
Surgical appliances and supplies	16,688	8.1%	16,688	0	0	0	18,960
Aircraft equipment, nec	12,792	6.2%	12,782	5	5	0	750
Motor vehicle parts and accessories	10,000	4.9%	10,000	0	0	0	11,400
Metal heat treating	9,130	4.5%	9,130	0	0	0	8,270
Plastics foam products	7,326	3.6%	7,326	0	0	0	0
Industrial organic chemicals, nec	2,001	1.0%	2,001	0	0	0	470,000
Fabricated rubber products, nec	1,425	0.7%	1,425	0	0	0	4,679
Petroleum refining	800	0.4%				800	15
Adhesives and sealants	510	0.2%	510	0	0	0	0
Air, water, & solid waste mgmt	260	0.1%	5	0	250	5	0
Total	205,007	100%	116,168	5	260	88,574	2,527,966

Table 34: 1998 TRI: 1,1,1-TCA by Facility

Facility	County	TOTAL	%	Air	Water	POTW	Offsite Disp	Offsite recycle
Onyx Environmental Services	Los Angeles	48,851	23.8%	20	0	5	48,826	1,779,000
Rho-Chem Corp.	Los Angeles	42,193	20.6%	3,250	0	0	38,943	0
Orcon Corp.	Alameda	25,219	12.3%	25,219	0	0	0	11,422
J.P. Turgeon & Sons, Inc.	Los Angeles	17,812	8.7%	17,812	0	0	0	2,220
Composite Structures LLC	Los Angeles	12,792	6.2%	12,782	5	5	0	750
McGhan Medical Corporation	Santa Barbara	12,077	5.9%	12,077	0	0	0	2,332
THMX Holdings, LLC/DBA Thermal Dynamics Corp.	San Bernardino	10,000	4.9%	10,000	0	0	0	11,400
Dixon Hard Chrome, Inc.	Los Angeles	10,000	4.9%	10,000	0	0	0	250
Astro Aluminum Treating Co., Inc.	Los Angeles	9,130	4.5%	9,130	0	0	0	8,270
Foamex, LP	San Bernardino	7,326	3.6%	7,326	0	0	0	0
McGhan Medical Corp.	Santa Barbara	4,611	2.2%	4,611	0	0	0	16,628
Allied Signal, Inc.	Los Angeles	2,001	1.0%	2,001	0	0	0	470,000
Music Technology	Santa Barbara	1,425	0.7%	1,425	0	0	0	4,679
Tosco Refining Co., Los Angeles Refinery Wilmington	Los Angeles	800	0.4%	0	0	0	800	15
Stabond Corporation		510	0.2%	510	0	0	0	0
U. S. Filter Recovery Services (CA Inc.	Los Angeles	260	0.1%	5	0	250	5	0
Total		205,007	100%					

Table 35: 1998 TRI: Tetrachloroethylene by Industry Type

SIC Code Description	TOTAL	%	Air	Water	Land	POTW	Offsite Disp	Offsite Recycle
Aircraft	204,912	20.0%	204,831	0	0	1	80	12
Bolts, nuts, rivets, and washers	138,755	13.5%	138,755	0	0	0	0	92,743
Plating and polishing	136,191	13.3%	105,590	0	0	0	30,601	26,403
Aircraft equipment, nec	134,528	13.1%	115,529	0	0	0	18,999	4,151
Refuse systems	108,984	10.6%	1,839	0	18,986	16	88,143	1,779,750
Steel pipe and tubes	60,175	5.9%	60,175	0	0	0	0	2,033
Sporting and athletic goods, nec	28,085	2.7%	28,085	0	0	0	0	24,535
Residential lighting fixtures	27,262	2.7%	25,182	0	0	0	2,080	0
Fabricated pipe and fittings	23,005	2.2%	23,000	5	0	0	0	5,400
Screw machine products	21,000	2.0%	21,000	0	0	0	0	2,900
Agricultural chemicals, nec	18,098	1.8%	9,300	28	0	0	8,770	1,100
Metalworking machinery, nec	16,200	1.6%	16,200	0	0	0	0	750
Electric lamps	15,400	1.5%	15,400	0	0	0	0	13,200
Adhesives and sealants	13,755	1.3%	13,755	0	0	0	0	0
Fabricated metal products, nec	13,260	1.3%	13,260	0	0	0	0	11,655
Fabricated rubber products, nec	11,940	1.2%	11,190	0	0	0	750	0
Electronic components, nec	11,005	1.1%	11,005	0	0	0	0	6,399
Semiconductors and related devices	7,143	0.7%	7,143	0	0	0	0	21,576
Petroleum refining	6,440	0.6%	6,327	13	0	0	100	0
Chemicals & allied products, nec	5,677	0.6%	2,514	0	0	0	3,163	2,919
Metal heat treating	5,535	0.5%	5,535	0	0	0	0	7,425
Metal stampings, nec	5,204	0.5%	5,204	0	0	0	0	11,664
Aircraft engines and engine parts	4,255	0.4%	4,239	0	0	16	0	2,040
Pens and mechanical pencils	4,155	0.4%	4,155	0	0	0	0	38,218
Environmental controls	3,213	0.3%	3,213	0	0	0	0	13,932
Hardware, nec	2,205	0.2%	1,729	0	0	12	464	39,296
Air, water, & solid waste management	260	0.0%	5	0	0	250	5	0
Business services, nec	98	0.0%	98	0	0	0	0	3,868
Chemical preparations, nec	63	0.0%	63	0	0	0	0	663
Total	1,026,803	100%	854,321	46	18,986	295	153,155	2,112,632

Table 36: 1998 TRI, Tetrachloroethylene by Facility

FACILITY	County	TOTAL	%	Air	Water	Land	POT W	Offsite Disp	Offsite Recycle
Aerochem, Inc. Orange Facility	Orange	106,946	10.4%	106,946	0	0	0	0	0
Kaynar Technologies	Orange	105,555	10.3%	105,555	0	0	0	0	61,443
Aerochem, Inc.	San Bernardino	79,427	7.7%	79,427	0	0	0	0	1
Northrop Grumman corp. EC	Los Angeles	71,056	6.9%	70,981	0	0	0	75	12
Lefiell Mfg. Co.		60,175	5.9%	60,175	0	0	0	0	2,033
Onyx Environmental Services	Los Angeles	48,846	4.8%	15	0	0	5	48,826	1,779,000
Mechanical Metal Finishing	Los Angeles	45,390	4.4%	15,539	0	0	0	29,851	0
Rho-Chem Corp.	Los Angeles	40,649	4.0%	1,500	0	0	0	39,149	0
Hillerich & Bradsby Co., Inc.	San Bernardino	28,085	2.7%	28,085	0	0	0	0	24,535
Frederick Ramond, Inc.	Los Angeles	27,262	2.7%	25,182	0	0	0	2,080	0
Northrop Grumman Corp. D5 Facility	Los Angeles	26,910	2.6%	26,904	0	0	1	5	0
Valley-Todeco, Inc.	Los Angeles	24,000	2.3%	24,000	0	0	0	0	25,000
Arrowhead Products	Orange	23,900	2.3%	23,900	0	0	0	0	4,150
Precision Tube Bending	Los Angeles	23,005	2.2%	23,000	5	0	0	0	5,400
Sorenson Engineering, Inc.	San Bernardino	21,000	2.0%	21,000	0	0	0	0	2,900
Weber Aircraft, Inc.	Orange	19,749	1.9%	1,000	0	0	0	18,749	0
Chemical Waste Management, Inc.	Kings	19,251	1.9%	255	0	18,986	0	10	750
The DOW Chemical Company	Contra Costa	18,098	1.8%	9,300	28	0	0	8,770	1,100
Crown Chrome Plating		17,500	1.7%	17,500	0	0	0	0	3,500
Grover Products Co.	Los Angeles	16,429	1.6%	16,429	0	0	0	0	0
Amada Mfg. America Inc.	Los Angeles	16,200	1.6%	16,200	0	0	0	0	750
Drilube Company	Los Angeles	15,400	1.5%	15,400	0	0	0	0	13,200
Orange County Plating Co., Inc.	Orange	14,144	1.4%	14,144	0	0	0	0	10,336
AC Products, Inc.	Orange	13,755	1.3%	13,755	0	0	0	0	0
J & H Deburring	Orange	13,260	1.3%	13,260	0	0	0	0	11,655
Metal Surfaces, Inc.	Los Angeles	13,000	1.3%	13,000	0	0	0	0	10,000
West American Rubber Co., Inc.	Orange	11,940	1.2%	11,190	0	0	0	750	0
Rohr, Inc.	San Diego	11,250	1.1%	11,000	0	0	0	250	0
Lockhart Industries	Los Angeles	11,005	1.1%	11,005	0	0	0	0	6,399
Palace Plating	Los Angeles	10,750	1.0%	10,000	0	0	0	750	750
AAA Plating & Inspection, Inc.	Los Angeles	9,433	0.9%	9,433	0	0	0	0	1,067
PB Fasteners	Los Angeles	9,200	0.9%	9,200	0	0	0	0	6,300
Model Plating Company, Inc.	Los Angeles	9,045	0.9%	9,045	0	0	0	0	0
Microsemi Corp.	Orange	7,143	0.7%	7,143	0	0	0	0	21,576
Industrial Steel Treating Co.	Los Angeles	5,535	0.5%	5,535	0	0	0	0	7,425
Bazz Houston Co.	Orange	5,204	0.5%	5,204	0	0	0	0	11,664
Chem-Tronics, Inc.	San Diego	4,255	0.4%	4,239	0	0	16	0	2,040

The Gillette Co./Stationery Products Group	Los Angeles	4,155	0.4%	4,155	0	0	0	0	38,218
Great Western Chemical Company - Richmond	Contra Costa	3,600	0.4%	500	0	0	0	3,100	1,200
Chevron Products Company - Richmond Refinery	Contra Costa	3,600	0.4%	3,600	0	0	0	0	0
Robert Shaw Controls Company	Los Angeles	3,213	0.3%	3,213	0	0	0	0	13,932
Kwikset Corp.	Orange	2,205	0.2%	1,729	0	0	12	464	39,296
Exxon Company, USA Benicia Refinery	Solano	1,700	0.2%	1,700	0	0	0	0	0
The DOW Chemical Company - Long Beach Terminal	Los Angeles	1,393	0.1%	1,330	0	0	0	63	670
Associated Plating Co.	Los Angeles	500	0.0%	500	0	0	0	0	750
Tosco San Francisco Area Refinery at Avon	Contra Costa	463	0.0%	450	13	0	0	0	0
Tosco San Francisco Area Refinery at Rodeo	Contra Costa	400	0.0%	300	0	0	0	100	0
U. S. Filter Recovery Services (CA) Inc.	Los Angeles	260	0.0%	5	0	0	250	5	0
Soco-Lynch Corporation	Los Angeles	250	0.0%	250	0	0	0	0	0
Safety-Kleen (Reedley), Inc.	Fresno	238	0.0%	69	0	0	11	158	0
ARCO Products Company - Los Angeles Refinery	Los Angeles	230	0.0%	230	0	0	0	0	0
Kaiser Electroprecision	Orange	202	0.0%	202	0	0	0	0	0
HCI Holchem, Inc.	Los Angeles	179	0.0%	179	0	0	0	0	0
Ashland Distribution Company	Los Angeles	131	0.0%	131	0	0	0	0	1,049
A.G. Layne, Inc.	Los Angeles	112	0.0%	112	0	0	0	0	0
Sherwin-Williams Co. (Anaheim)	Orange	98	0.0%	98	0	0	0	0	3,868
EKC Technology, Inc.	Alameda	63	0.0%	63	0	0	0	0	663
Martinez Refining Company A Division of Equilo	Contra Costa	47	0.0%	47	0	0	0	0	0
Soco Lynch Corp. DBA Crown Chemical Corp.	San Diego	12	0.0%	12	0	0	0	0	0
Total		1,026,803	100%						

Methylene Chloride

Table 37: 1998 TRI Methylene Chloride Releases by Industry Type

SIC	SIC Code Description	TOTAL	%	Air	Water	POTW	Offsite Disp	Offsite recycle
3086	Plastics foam products	730,000	67.0%	730,000	0	0	0	2,200
9711	National security	99,657	9.2%	80,340	0	2	19,315	13,000
4953	Refuse systems	88,712	8.1%	732	0	5	87,975	2,000,000
3851	Ophthalmic goods	35,961	3.3%	35,961	0	0	0	51,013
2879	Agricultural chemicals, nec	33,802	3.1%	4,630	2	0	29,170	86,000
5169	Chemicals & allied products, nec	31,952	2.9%	29,211	1	0	2,740	16,070
2821	Plastics materials and resins	20,923	1.9%	20,923	0	0	0	5,359
2891	Adhesives and sealants	16,324	1.5%	16,324	0	0	0	11,704
2834	Pharmaceutical preparations	12,320	1.1%	12,310	0	10	0	1,000,000
7389	Business services, nec	7,815	0.7%	7,815	0	0	0	32,323
3826	Analytical instruments	4,651	0.4%	400	0	1	4,250	0
2851	Paints and allied products	3,429	0.3%	3,429	0	0	0	0
2836	Biological products exc. diagnostic	1,500	0.1%	1,500	0	0	0	38,000
2842	Polishes and sanitation goods	750	0.1%	750	0	0	0	0
2835	Diagnostic substances	350	0.0%	100	0	250	0	22,300
9511	Air, water, & solid waste management	255	0.0%	0	0	5	250	0
2753	Engraving and plate printing	250	0.0%	0	0	250	0	0
2899	Chemical preparations, nec	250	0.0%	250	0	0	0	14,065
	Totals	1,088,901	100%	944,675	3	523	143,700	3,292,034

Table 38: 1998 TRI Releases, Methylene Chloride Releases by Facility

Facility	County	TOTAL	%	Air	Water	POTW	Offsite Disp	Offsite Recycle
Carpenter Co.	San Joaquin	730,000	67.0%	730,000	0	0	0	2,200
USDOD U S Navy Naval air Station North Island	San Diego	62,100	5.7%	62,100	0	0	0	13,000
Onyx Environmental Services	Los Angeles	49,063	4.5%	232	0	5	48,826	2,000,000
RHO-CHEM Corp.	Los Angeles	39,649	3.6%	500	0	0	39,149	0
US DOD USAF McClellan AFB CA	Sacramento	37,557	3.4%	18,240	0	2	19,315	0
The DOW Chemical Company	Contra Costa	33,802	3.1%	4,630	2	0	29,170	86,000
Signet Armorlite, Inc.	San Diego	23,199	2.1%	23,199	0	0	0	50,763
Cape Composites Inc.		14,645	1.3%	14,645	0	0	0	5,359
The DOW Chemical Company - Long Beach Terminal	Los Angeles	13,140	1.2%	12,000	0	0	1,140	4,600
Stabond Corporation		12,856	1.2%	12,856	0	0	0	0
Vision-Ease Lens Azusa	Los Angeles	12,762	1.2%	12,762	0	0	0	250
Alza Corp.	Solano	11,800	1.1%	11,800	0	0	0	770,000
Sherwin-Williams Co. (Anaheim)	Orange	7,815	0.7%	7,815	0	0	0	32,323
Reinhold Industries	Los Angeles	6,278	0.6%	6,278	0	0	0	0
PE Biosystems	San Mateo	4,651	0.4%	400	0	1	4,250	0
Soco Lynch Corp DBA Crown Chemical Corp.	San Diego	4,506	0.4%	4,506	0	0	0	0
Ashland Distribution Company	Los Angeles	3,581	0.3%	3,580	1	0	0	6,380
Carlisle Coatings and Waterproofing, Inc.	San Bernardino	3,468	0.3%	3,468	0	0	0	11,704
Jasco Chemical Corp.	Orange	3,429	0.3%	3,429	0	0	0	0
HCI Holchem, Inc.	Los Angeles	2,977	0.3%	2,977	0	0	0	0
Chemcentral/Los Angeles	Los Angeles	2,834	0.3%	2,834	0	0	0	0
Great Western Chemical Company - Richmond	Contra Costa	1,855	0.2%	255	0	0	1,600	1,600
Soco-Lynch Corporation	Los Angeles	1,560	0.1%	1,560	0	0	0	0
Multiple Peptide Systems	San Diego	1,500	0.1%	1,500	0	0	0	38,000
NCH Corp./Mohawk Laboratories Div.	Santa Clara	750	0.1%	750	0	0	0	0
Van Waters & Rogers Inc.	Santa Clara	655	0.1%	655	0	0	0	2,860
A.G. Layne, Inc.	Los Angeles	580	0.1%	580	0	0	0	0
Bachem, Inc.	Los Angeles	505	0.0%	500	0	5	0	236,578
JBL Scientific, Inc.	San Luis Obispo	350	0.0%	100	0	250	0	22,300
Chemcentral/San Francisco	Alameda	264	0.0%	264	0	0	0	630
U. S. Filter Recovery Services (CA) Inc.	Los Angeles	255	0.0%	0	0	5	250	0

Andpak-EMA, Inc.	Santa Clara	250	0.0%	250	0	0	0	14,065
Gtraphic Dies Inc.	Los Angeles	250	0.0%	0	0	250	0	0
Bachem, Inc.	San Diego	15	0.0%	10	0	5	0	51,635
Totals		1,088,901		944,675	3	523	143,700	3,350,247

Copper

Table 39: Copper, total TRI 1998; top 20 SICs

SIC Code	SIC Code Description	Total	%	Air	Water	Land	POTW	Offsite Disp	Offsite recycling
3672	Cathode ray television picture tubes	207,952	26.3%	0	0	0	250	207,702	0
9511	Air, water, & solid waste management	207,320	26.2%	0	0	0	250	207,070	161,016
4953	Refuse systems	141,527	17.9%	18	0	141,506	0	3	0
1041	Gold ores	65,562	8.3%	1	0	65,561	0	0	0
3672	Cathode ray television picture tubes	35,230	4.5%	0	0	0	250	34,980	0
3645	Residential lighting fixtures	31,795	4.0%	31,795	0	0	0	0	6,960
4953	Refuse systems	28,355	3.6%	0	0	0	250	28,105	56,000
3479	Metal coating and allied services	12,650	1.6%	0	0	0	250	12,400	0
3643	Current-carrying wiring devices	6,810	0.9%	5	250	0	250	6,305	0
2754	Commercial printing, gravure	6,473	0.8%	0	0	0	23	6,450	56,250
3949	Sporting and athletic goods, n.e.c.	5,138	0.6%	180	1	0	0	4,957	0
3357	Nonferrous wire drawing & insulating	4,680	0.6%	998	0	0	0	3,682	1,575,969
3369	Nonferrous foundries, n.e.c.	3,900	0.5%	19	5	0	0	3,876	56,705
3721	Aircraft	3,248	0.4%	0	0	0	3	3,245	38,010
3369	Nonferrous foundries, n.e.c.	3,180	0.4%	29	0	0	0	3,151	0
3432	Plumbing fittings and brass goods	2,823	0.4%	0	24	0	21	2,778	8,748
3357	Nonferrous wire drawing & insulating	2,613	0.3%	465	0	0	19	2,129	1,116,166
3321	Gray and ductile iron foundries	2,569	0.3%	2	2,567	0	0	0	43,505
3711	Motor vehicles and car bodies	1,650	0.2%	0	0	0	250	1,400	75,000
3341	Secondary nonferrous metals	1,241	0.2%	9	0	616	0	616	0
	Total		0.98	33,521	2,847	207,683	1,816	528,849	3,194,329
	Grand Total	790,493		38,422	3,135	207,834	8,484	532,618	13,333,395

Table 40: Copper, TRI 1998 by facility

Facility	County	Total	%	Land	POT W	Offsite Disposal	Offsite Recycle
Tyco Printed Circuit Group, Inc. (Formerly Electro)	Los Angeles	207,952	26.3%	0	250	207,702	0
U.S. Filter Recovery Services (CA) Inc.	Los Angeles	207,320	26.2%	0	250	207,070	161,016
Safety-Kleen (Westmorland), Inc.	Imperial	141,527	17.9%	141,506	0	3	0
McLaughlin Mine	Lake	65,562	8.3%	65,561	0	0	0
Cosmotronic Company Corp	Orange	35,230	4.5%	0	250	34,980	0
Frederick Ramond, Inc.	Los Angeles	31,795	4.0%	0	0	0	6,960
Dk Environmental Inc.	Los Angeles	28,355	3.6%	0	250	28,105	56,000
Bay Mirror Inc.	Alameda	12,650	1.6%	0	250	12,400	0
Alflex Corp.		6,810	0.9%	0	250	6,305	0
Quebecor Printing - San Jose Inc.	Santa Clara	6,473	0.8%	0	23	6,450	56,250
Callaway Golf Company	San Diego	5,138	0.6%	0	0	4,957	0
Bicccgeneral Cable Industries, Inc	Fresno	4,680	0.6%	0	0	3,682	1,575,969
Techni-Cast Corp.	Los Angeles	3,900	0.5%	0	0	3,876	56,705
Douglas Products Division	Los Angeles	3,248	0.4%	0	3	3,245	38,010
Montclair Bronze, Inc.		3,180	0.4%	0	0	3,151	0
Price Pfister, Inc.	Los Angeles	2,823	0.4%	0	21	2,778	8,748
Pirelli Cables And Systems --North America	Colusa	2,613	0.3%	0	19	2,129	1,116,166
Griswold Industries	Orange	2,569	0.3%	0	0	0	43,505
New United Motor Mfg. Inc.	Alameda	1,650	0.2%	0	250	1,400	75,000
TST Inc. Db a Timco, Db a Tandem		1,241	0.2%	616	0	616	0
Total		774,716	98.0%	207,683	1,816	528,849	3,194,329
Grand Total		790,748		207,834	8,489	532,868	13,333,395

Copper Compounds

Table 41: Copper Compounds, 1998 TRI

SIC Code	SIC Description	Total	%	Air	Water	Land	POTW	Offsite Disposal	Offsite Recycle
4953	Refuse systems	307,768	35%	1,556	0	305,957	0	255	0
3341	Secondary nonferrous metals	204,117	23%	59	0	0	58	204,000	0
2869	Industrial organic chemicals, nec	137,247	15%	7	0	0	240	137,000	0
4953	Refuse systems	123,615	14%	10	0	123,600	0	5	0
3083	Laminated plastics plate & sheet	39,083	4%	0	0	0	0	39,083	0
3429	Hardware, nec	24,265	3%	245	188	0	891	22,941	100,000
3471	Plating and polishing	9,737	1%	6	0	0	450	9,281	23,000
3731	Ship building and repairing	8,700	1%	465	2	0	23	8,210	9,886
2911	Petroleum refining	7,277	1%	220	1	0	0	7,056	2,200
3471	Plating and polishing	5,810	1%	250	0	0	250	5,310	7,538
2911	Petroleum refining	5,275	1%	2,100	370	0	7	2,798	37
2851	Paints and allied products	2,438	0%	1,399	0	0	0	1,039	0
3672	Cathode ray television picture tubes	1,085	0%	250	0	0	563	272	300,000
2491	Wood preserving	755	0%	5	0	0	0	750	0
3672	Cathode ray television picture tubes	750	0%	0	0	0	750	0	100,000
3672	Cathode ray television picture tubes	750	0%	0	0	0	750	0	300,000
3672	Cathode ray television picture tubes	550	0%	0	0	0	550	0	1,000,000
2491	Wood preserving	515	0%	5	5	0	5	500	0
2911	Petroleum refining	510	0%	10	0	0	0	250	515
3672	Cathode ray television picture tubes	505	0%	255	0	0	250	0	37,382
3471	Plating and polishing	500	0%	250	0	0	250	0	13,090
3471	Plating and polishing	500	0%	250	0	0	250	0	16,592
2491	Wood preserving	454	0%	0	1	0	0	453	0
2911	Petroleum refining	402	0%	0	0	0	0	402	352
3724	Aircraft engines and engine parts	389	0%	1	0	0	18	370	356
3672	Cathode ray television picture tubes	269	0%	59	5	0	74	131	200,000
3672	Cathode ray television picture tubes	265	0%	0	0	0	250	15	13,264
3672	Cathode ray television picture tubes	260	0%	10	0	0	250	0	100,000
3672	Cathode ray television picture tubes	260	0%	10	0	0	250	0	100,000
2048	Prepared feeds, n.e.c.	250	0%	250	0	0	0	0	0
2851	Paints and allied products	250	0%	0	0	250	0	0	117
3471	Plating and polishing	250	0%	0	0	0	250	0	5,400
3672	Cathode ray television picture tubes	250	0%	0	0	0	250	0	25,307
3672	Cathode ray television picture tubes	250	0%	0	0	0	250	0	74,550
3672	Cathode ray television picture tubes	250	0%	0	0	0	250	0	200,000
3672	Cathode ray television picture tubes	250	0%	0	0	0	250	0	300,000
3463	Nonferrous forgings	208	0%	1	0	0	1	206	158

3672	Cathode ray television picture tubes	167	0%	3	3	0	161	0	200,000
2911	Petroleum refining	158	0%	86	62	0	0	10	0
2819	Industrial inorganic chemicals, n.e.c.	150	0%	0	0	0	54	96	900,000
3672	Cathode ray television picture tubes	78	0%	0	0	0	78	0	57,821
2819	Industrial inorganic chemicals, n.e.c.	27	0%	0	0	0	27	0	100,000
3672	Cathode ray television picture tubes	15	0%	1	0	0	14	0	16,398
3672	Cathode ray television picture tubes	14	0%	0	1	0	12	1	4,640
3341	Secondary nonferrous metals	10	0%	5	0	0	5	0	69,850
3672	Cathode ray television picture tubes	9	0%	0	0	0	9	0	62,619
3672	Cathode ray television picture tubes	8	0%	0	3	0	5	0	80,190
2899	Chemical preparations, n.e.c.	5	0%	5	0	0	0	0	72
3672	Cathode ray television picture tubes	5	0%	5	0	0	0	0	0
3841	Surgical and medical instruments	5	0%	0	0	0	0	5	14,000
3672	Cathode ray television picture tubes	4	0%	0	2	0	2	0	32,537
2048	Prepared feeds, n.e.c.	0	0%	0	0	0	0	0	0
3341	Secondary nonferrous metals	0		0	0	0	0	0	400,000
3471	Plating and polishing	0		0	0	0	0	0	910
3471	Plating and polishing	0		0	0	0	0	0	2,976
3499	Fabricated metal products, n.e.c.	0		0	0	0	0	0	0
3672	Cathode ray television picture tubes	0		0	0	0	0	0	68,068
3714	Motor vehicle parts and accessories	0		0	0	0	0	0	6,300
3728	Aircraft equipment, n.e.c.	0		0	0	0	0	0	200,000
8731	Commercial physical research	0		0	0	0	0	0	0
	Total	886,664		7,778	643	429,807	7,747	440,439	5,146,125

Table 42: Total Copper Compounds, 1998 TRI Top 13 Facilities

Facility	County	Total	%	Air	Water	UG Inj	Land	POTW	Offsite Disp	Offsite recycle
Chemical Waste Management, Inc.	Kings	307,768	35%	1,556	0	0	305,957	0	255	0
Quemetco, Inc.	Los Angeles	204,117	23%	59	0	0	0	58	204,000	0
Procter & Gamble Mfg. Co.	Sacramento	137,247	15%	7	0	0	0	240	137,000	0
Safety-Kleen (Buttonwillow), Inc.	Kern	123,615	14%	10	0	0	123,600	0	5	0
Polyclad Laminates, Inc.	Orange	39,083	4%	0	0	0	0	0	39,083	0
Kwikset Corp.	Orange	24,265	3%	245	188	0	0	891	22,941	140,333
Crown City Plating Co.	Los Angeles	9,737	1%	6	0	0	0	450	9,281	23,000
San Francisco Drydock, Inc.	San Francisco	8,700	1%	465	2	0	0	23	8,210	9,886
Chevron Products Company - Richmond Refinery	Contra Costa	7,277	1%	220	1	0	0	0	7,056	2,200
Gene's Plating Works	Los Angeles	5,810	1%	250	0	0	0	250	5,310	7,538
Chevron U.S.A. Products Co.	Los Angeles	5,275	1%	2,100	370	0	0	7	2,798	37
Sherwin-Williams Co. (San Diego)	Los Angeles	2,438	0%	1,399	0	0	0	0	1,039	0
Sanmina Corporation	Orange	1,085	0%	250	0	0	0	563	272	333,430
Top 13		876,417	100%	6,567	561		429,557	2,482	437,250	516,424
Grand total		886,664		7,778	643	250	429,807	7,747	440,439	5,078,734

Appendix 8

SUMMARY OF AND RESPONSES TO COMMENTS ON THE DEPARTMENT OF TOXIC SUBSTANCES CONTROL'S POLLUTION PREVENTION WORKPLAN AND REPORT

The legislature, via SB 1916 of 1998, augmented the state's hazardous waste pollution prevention program, located within Cal/EPA's Department of Toxic Substances Control (DTSC), by about \$1 million annually. The legislature also directed the DTSC to convene a Pollution Prevention Advisory Committee to help determine how to target the DTSC's pollution prevention resources. Through a collaborative fact-finding and decision-making process, DTSC and the Advisory Committee developed a two-year work plan for DTSC's source reduction program. Two industries have been selected--the petroleum refining industry and the vehicle service repair industry--for special pollution prevention program focus during fiscal years 00/01 and 01/02.

The workplan was developed by DTSC's Office of Pollution Prevention and Technology Development (OPPTD) and Hazardous Waste Management Program pollution prevention staff, and was posted on DTSC's website.

Notification of the opportunity to comment on the draft document was sent to an extensive list (over 1,400 entities) of interested parties. Eight individuals attended the public meeting and provided questions and/or comments. Only one written comment was received from the public. In addition, the DTSC's Hazardous Waste Management Program (HWMP) provided written comments.

DTSC expects the final workplan and report to be published in September 2000. If you have any questions, please contact Kathy Barwick, OPPTD, at (916) 323-9560.

Public Meetings

Two meetings were held during May and June of 2000, one in Berkeley and one in Carson, California to receive public comment. At these meetings, comments were received from eight individuals:

- Ms. Robin Bedell-Waite, Contra Costa County
- Mr. Leif Magnuson, U.S. EPA Region IX
- Dr. Henry Clark, West Contra Costa Toxics Coalition
- Mr. Michael Kent, Contra Costa Health Services
- Mr. Gary Nolan, Santa Clara County Pollution Prevention Program
- Mr. Marshall Waller, Tosco Refining Company
- Ms. Carmen L. Piro, Long Beach Certified Unified Program Agency (CUPA)
- Mr. Eugene Becker, Global Sulfur
- Ms. Kathryn Gleeson, Paramount Petroleum

May 31, 2000 Public Meeting Comments

The comments were generally supportive of the approach taken by the DTSC in formulating its 2-year workplan for vehicle repair and petroleum refineries. In the Berkeley meeting, comments stressed the following:

- ◆ work with and through local agencies;
- ◆ ensure a multimedia approach (rather than focusing solely on hazardous waste source reduction);
- ◆ involve communities, and provide information to community groups in a manner that is accessible and meaningful;
- ◆ include consideration of consumer choices and responsibility; and
- ◆ refrain from initiating new awards programs. Build or support existing local-level recognition programs instead.

Responses

1. *Work through local agencies*

Response: DTSC's pollution prevention program has long recognized the value of working with local-level pollution prevention and hazardous waste regulatory programs. In addition, SB 1916 requires DTSC to work with local programs in its implementation of the small business pollution prevention project. As part of the needs assessment currently being conducted for the vehicle service repair project, local entities interested in participating in the project are being identified. The petroleum refineries project staff is also identifying appropriate local agencies for possible partnerships in the implementation of that project.

2. *Ensure a multimedia approach*

Response: DTSC recognizes that for both of the selected industries, the petroleum refining and vehicle service repair industries, solid waste, air and water pollution issues must be incorporated into project design and implementation. The participation of the Integrated Waste Management Board, the Air Resources Board, the state Water Resources Control Board and relevant regional Water Quality Control Boards will be sought as appropriate. In addition, as part of efforts to work with and through local agencies, appropriate publicly owned treatment works (POTWs) and air quality management districts will be identified as partners.

3. *Involve communities, and provide information to community groups in a manner that is accessible and meaningful*

Response: As an integral portion of the partnership approach for both selected industries, interested and affected community and employee groups will be identified for participation. DTSC appreciates the observation that providing highly technical information via the internet may not be the most effective way of engaging the general public and interested community groups. To that end, we will work with community

groups to identify effective communication methods, particularly in the implementation of the petroleum refining project.

4. *Include consideration of consumer choices and responsibility*

Response: DTSC believes the opportunities for a major focus on consumer choices and responsibility are fairly limited at this time, particularly in the context of the petroleum refineries project. Limited resources also will constrain efforts to focus on consumer behavior. To the extent that low-cost opportunities for consumer emphasis are identified in the vehicle repair project, they may be incorporated into the overall approach. For example, there may be opportunities to partner with agencies such as the Bureau of Automotive Repair, the Air Resources Board and the Integrated Waste Management Board, which currently operate consumer education campaigns.

5. *Refrain from initiating new awards programs*

Response: DTSC appreciates the distinction made between “awards” and recognition” programs. This distinction will be useful as the DTSC and the Advisory Committee considers the value of voluntary programs, as mandated by SB 1916.

June 9, 2000 Public Meeting Comments

In the Carson meeting, the comments were less formal and structured. The comments and responses below represent a discussion with the Advisory Committee on issues brought forth by the commentors.

General

6. *DTSC should emphasize that industry participation in SB 1916 projects is voluntary*

Response: DTSC agrees that industry participation in these projects should be voluntary, and will continue to emphasize this.

7. *Clean up existing pollution prevention data and make it more useful; good data support effective pollution prevention*

Response: DTSC is aware that existing data are not adequate for pollution prevention targeting and progress assessment. Through its analysis of available data for this project, OPPTD has identified data needs that would support pollution prevention, and has communicated them to the DTSC’s information management group.

8. *Coordinate with downtown L.A. training facility/community college*

Response: DTSC appreciates the suggestion and will follow up as appropriate.

Petroleum Refineries

9. Refinery “low-hanging fruit” is already picked

Response: DTSC is aware that the refinery industry has made significant progress in implementing source reduction strategies. However, the data analysis performed for this project nevertheless indicates this industry as the single-largest hazardous waste generator, by industry type, in California. In addition, community concerns about air and water pollution from this industry make it a good candidate for work with agencies that regulate these environmental media, such as the regional water quality control boards, the local air quality management districts, and wastewater management agencies.

Finally, a recent project at the Dow-Midland facility in Michigan concluded that even a sophisticated facility whose engineers presume that any cost-effective pollution prevention opportunities had long since been implemented can benefit significantly from a fresh look. In the Dow-Midland project, facility managers were surprised at the pollution prevention opportunities that were identified during a collaborative project that brought in an outside engineer for an extensive search for pollution prevention opportunities. (For more information about the results of this project, see <http://www.igc.org/nrdcpro/msri/msriinx.html>, especially the executive summary.) These results, together with the tenets of “continuous improvement” contained within quality management philosophies, should encourage facilities with significant waste and emissions to continue searching for ways to reduce those pollutants at the source.

10. Possible lack of awareness of petroleum industry of the SB 1916 process

Response: DTSC pollution prevention staff has met twice with petroleum refinery association representatives to discuss the development and implementation of the petroleum project. Specifically, DTSC has met with representatives from the Western States Petroleum Association (WSPA) and its waste management working group. Contact with individual facilities will be made as implementation of the project progresses. In addition to the above contacts, WSPA representatives are notified periodically via e-mail of the overall SB 1916 process.

Vehicle Service Repair

11. Questions on re-refined oil-- What per cent of recycled oil is re-refined and used as motor oil? Guess is that it is low – marketing is a big challenge, need to develop a market for re-cycled oil. “Re-refined” terminology is a marketing challenge. Is it cheaper to burn it?

Response: As part of the vehicle service project, DTSC is investigating vehicle oil management in an effort to gain a greater understanding of whether “recycled oil” is re-refined, or burned as a fuel.

12. *How many auto repair facilities fall under SB 14? Unregistered facilities are a problem.*

Response: Most of the vehicle repair facilities targeted for this project will not be subject to the Hazardous Waste Source Reduction and Management Review Act (aka SB 14), generally because automotive fluids are exempt from those requirements. DTSC realizes that unregistered auto repair facilities may pose environmental hazards. However, considering the large number of registered facilities and the limited DTSC resources, we have focused the small business project on the known facilities.

Role of local governments

13. *How can locals best work with DTSC?*

Response: Local regulatory and pollution prevention programs can assist DTSC by providing facilities with direct and easy access to centralized information about pollution prevention, while making sure the information that is provided is timely and up to date.

14. *What is the role of inspectors in these projects?*

Response: While the specific role of local inspectors in the projects outlined in the DTSC's workplan is still under development, DTSC believes these projects provide the opportunity for inspectors to convey pollution prevention information directly to businesses. Further development of the possible roles will be shared with local programs as the project progresses.

Written Comments

Written comments were received via e-mail from Ms. Stephanie Hughes, Manager of Environmental Control Programs at the Regional Water Quality Control Plant operated by the City of Palo Alto:

15. *DTSC should help answer the question of what to use instead of spray cleaners (per the new ARB regulation). It would be great if DTSC created a flyer that we could distribute to present the alternatives and explain the best situations/ways to use them. Also, if there are situations where the alternatives don't work well, what else is suggested? Also, DTSC should follow-up if there is new information re: cold cleaner bath alternatives.*

Response: In Chapter 5, Phase 1 of the Vehicle Service And Repair Workplan, the department briefly outlined plans to establish partnerships with public and private entities to coordinate media-specific information for the vehicle repair and service industry. Tasks outlined in this section would include identifying the pressing compliance issues for the industry and enlisting the appropriate agencies for training support and the development of resources and fact sheets for distribution to our audiences. We have discussed including ARB as well as local air district staff in training to address such concerns. The *Resource Development* section in Phase 1, Project Development also describes the development of a database for product and equipment vendors as well as

the update and maintenance of resources which would address medium-specific issues such as chlorinated solvent alternatives and other pollution prevention alternatives to protect water quality, reduce hazardous waste generation and increase compliance.